TEXTILE TECHNOLOGY DIGEST

VOLUME 6 SEPTEMBER 1949 NUMBER 9

Abstracts

(An explanation of the classification used in the Digest was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors)

[668]

FIBERS A

Modern textile fibers. Anon. *Textile Recorder 67,* 62-5 (June, 1949).

This is a review of a paper presented by L. Rose (Courtaulds Ltd.) at the Textile Conference, Amsterdam, April 11-12, 1949. Discussed in the paper are developments in fibers based on natural raw materials, modifications and after treatments of organic synthetic fibers and inorganic fibers. New ways of utilization and outstanding properties of the fibers are emphasized rather than the methods of preparation. Among the recent developments stressed are the increased utilization of 1 denier/filament fibers for softness effects, pigment coloring of viscose prior to spinning, preparation of improved saponified acetate yarn by high temperature stretching and hydrolysis of standard acetate rayon, use of calcium alginate yarns in the preparation of twistless cotton cloths, animalizing rayon to increase its affinity for acid dyes by incorporating polyethyleneimine resin in the viscose, and the use of vinyl copolymer and polythene monofils in upholstery fabrics.

Structure of textile fibers. I—Why are fibers fibrous? L. Simmens & A. R. Urquhart. **II—Fibers and plastics.** A. Howlett. **III—Fiber properties and molecular arrangement.** H. J. Woods. **IV—The structure of cotton.** D. A. Clibbens. *J. Textile Inst. (Proc.) 40,* P3-P10 (Jan. 1949); P241-7 (Mar. 1949); P363-9 (Apr. 1949); P426-43 (May, 1949).

These are the first 4 of a series of 10 articles especially written for the non-specialist in order to provide a background of knowledge based on the generally accepted scientific views. The first 3 articles discuss fibers in general; the remaining 7 will be concerned with more detailed accounts of the individual fibers.

[669]

Natural fibers A 1

Control mechanism for decorticating machines. John V. Johansen & Carl C. Westergaard (to Johansen). USP 2 463 278, Mar. 1, 1949.

A control mechanism for decorticating machines is arranged to operate the machines under full manual control, full automatic control, and also under a combination of manual and automatic control. When under this combination of controls the manual part of the control is rendered ineffective until the automatically controlled part of the cycle has been completed. The control unit is readily removable from the machine for adjustment and maintenance. (see also TTD: *3,* 163).

New flax processing in France. Anon. *Vlasberichten No. 10,* 3 (1949).

Increasing use is being made of a process in which green flax is scutched and then treated chemically. Mobile equipment is available to visit farms; the scutched material, now greatly reduced in bulk, is taken away for chemical treatment. (through *J. Textile Inst. 40,* A187 (May, 1949)).

Recent developments of fiber flax processing equipment in the United States. Jesse E. Harmond, Bur. of Plant Industry, Soils & Agricultural Engineering. *Fibres, Fabric & Cordage 16,* 188-90 (June, 1949).

This is a report on the following machines: (1) A retted straw pick-up binder; (2) an improved turbine flax scutching machine that extracts more fiber from the straw; (3) a rotary comb de-seeder that removes seed from more than 3 tons of straw per hr.; and (4) a flax pulling machine that will pull more than 2 acres of flax per hr. A short description of each of the above is given. These machines were developed by the U. S. Dept. of Agriculture and Oregon State Experiment Station.

So Spins the Silk Worm. Zoë Lady Hart Dyke.

TEXTILE TECHNOLOGY DIGEST is published monthly by the Institute of Textile Technology, Charlottesville, Virginia. In preparing these abstracts, the editorial staff seeks to report correctly the contents of the original papers without reflecting the views of the staff or the members of the Institute. Printed in the U. S. A. Copyright 1949 by the Institute of Textile Technology.

London, Rockliff Publishing Corp. Ltd. 1949; 184 p.; Price: 15s.

Lady Hart Dyke gives us the story of silk, with accounts of her setbacks and triumphs, in a campaign to gain recognition for her English silk industry. She brings us up-to-date with the latest developments at Lullingstone, still the only silk farm in England. . . . —*Silk & Rayon.*

Structure of textile fibers V. Structure of proteins—silk. F. O. Howitt. *J. Textile Inst. (Proc.) 40,* P465-74 (June, 1949).

In this, the fifth of a series of papers, the author discusses the fine structure of degummed silk filaments. The building unit in the case of a protein such as silk is the amino acid represented by the general formula NH_2—CHR—COOH where R is a number of atoms built up into various groups. The silk filament consists of aggregates of rod-like molecules regularly packed, and in alignment with the fiber axis each of which is cross linked to the immediately adjacent molecules by hydrogen bonds. Also discussed are the hydrolysis of silk with acids and alkalies and the effect of such hydrolysis on the dyeing and swelling properties of this fiber.

Wild hollyhock: a substitute for jute. *Cordage World & Ind. Textiles 31,* 31 (1949).

South Africa is short of jute on account of Indian trade sanctions, and is developing the "wilde stokroos", *Urena lobata,* as a source of fiber. Over 3,000 acres were sown last autumn and the crop will be ready for cutting this summer. After cutting, the plants are dried in the fields and retted and decorticated. It is claimed that grain bags made from fibers of the "wilde stokroos" are much more durable than those of Indian jute. (through *J. Textile Inst. 40,* A184 (May, 1949)).

Yesterday, today and tomorrow in the jute industry. S. Coggi. *Mondo Tessile 3,* 18-19 (Jan. 1948); *in Italian.*

During the war hemp and gorse were utilized as substitutes for the jute which could no longer be imported from its source. The peeled hemp in the form of twigs employed for the purpose required no preliminary steeping process but the bundles of fibers proved rather difficult to separate, and the fiber hard to spin. Gorse fiber was demonstrated as excellent particularly for the manufacture of packing fabrics, although the cost of preparation of the raw material was extremely high. Results of experiments with artificial fibers as possible substitutes for jute indicated their unsuitability for use on machinery designed for

the production of jute fabrics. This review of past accomplishments in the jute industry is intended to serve as a guide for the present and future course and development of the latter.

Artificial fibers A 2

Advancement in glass fibers. Anon. *Am. Wool Cotton Reptr. 63,* 67, 69 (July 14. 1949).

The Coronizing treatment relaxes Fiberglas yarns under high temperatures and puts a weave set in them. Fiberglas yarns so treated, are finding extensive use in curtains and draperies. Glass fabrics, coated with resins or rubber, are being used in awnings, convertible automobile tops, etc. Other applications of Fiberglas textile products include insulation tapes, braids, plastics reinforcement and the like.

Celcos all-purpose fiber offers new blend possibilities. Anon. *Textile World 99,* 238, 242 (June, 1949).

Celcos is a new chemical fiber produced by Celanese Corp. of Am. that incorporates features of both acetate and viscose fibers. It is said to be suitable for suitings and dress goods and to blend well with other commercial fibers.

Commercial outlook for Orlon. J. B. Quig, E I. du Pont de Nemours & Co. *Am. Wool Cotton Reptr. 63,* 10-11, 20 (Aug. 4, 1949).

A survey of the properties and applications for Orlon fiber, to aid in the commercial development of the fiber, is presented.

Cottonseed fibers. G. E. Hilbert, Bur. of Agricultural & Industrial Chemistry. *Textile Age 13,* 100-1 (July, 1949); *Textile Industries 113,* 115 (Aug. 1949).

Two new synthetic fibers are reported. One is made from cottonseed protein, is yellow or light orange, is about ¾ as strong as wool when dry, feels soft to the hand, and has good dyeing characteristics. The other fiber is spun from sodium carboxymethyl cellulose and salts of certain metals. It is colorless or lightly tinted, will dissolve in weak alkali solutions, has a dry strength about equal to wool, and is useful as a scaffolding fiber. Methods of spinning these new fibers are similar to the extrusion or spinneret system in making synthetic textiles.

Development of and uses for nylon yarns. D. C. Bennett. *J. Textile Inst. (Proc.) 40,* P483-88 (June, 1949).

The author discusses 14 major and predicts at

least 180 other uses for nylon yarns. The 14 major uses for this yarn are: 1) stockings; 2) apparel cloths; 3) foundation garments; 4) underwear; 5) ropes; 6) filter cloths; 7) tires; 8) laundry nets; 9) upholstery; 10) sewing thread; 11) medical; 12) skeleton (base) yarns; 13) socks; and 14) tarpaulins. The advantages and disadvantages of nylon for each of the specified purposes is indicated.

Fiber regeneration. Anon. *Chem. Eng. News 27*, 2092 (July 18, 1949).

A brief note reports progress made by the University of Leeds and Courtaulds, Ltd., in the regeneration of certain protein fibers from dissolved chicken feathers and from a mixture of casein and soluble keratin. Fibers thus formed could be readily stretched in hot water or steam to extensions greater than 100% of their original length, and are considered as being in the range of usable textile materials.

High-speed traverse. Ivanhoe P. Denyssen (to Am. Viscose Corp.). USP 2 463 604, Mar. 8, 1949.

A traversing mechanism for spinning machines used in the manufacture of artificial filaments includes a traverse member, a rotatable crank arm with means for rotating the crank arm, a Scotch yoke, and a block slidably mounted in the yoke. The slide block is connected to the crank arm and the yoke is connected to the traverse member. Eccentric means in the slide block adjust the stroke of the traverse member. A cam is provided for varying the rotation of the crank arm at predetermined intervals during each cycle of revolution, and means for adjusting the angular relationship between the cam and the axis of rotation of the crank arm is also provided.

Moisture absorption, density and swelling properties of nylon filaments. N. J. Abbott & A. C. Goodings. *J. Textile Inst. 40*, T232-46 (Apr. 1949).

Experimental data showing the dependence of moisture content, density and dimensions on relative humidity are given for both drawn and undrawn nylon filaments.

Monofilament and staple azlon produced. C. W. Bendigo. *Textile World 99*, 106-7 (May, 1949).

A new casein fiber, "Caslen", is being produced in monofilament and coarse-staple form. The fiber, originally developed for use as paint-brush bristle, is being spun in filaments of 145 to 1330 denier and is produced either curled or straight. The coarseness of the fiber makes its use alone unsuitable for yarn; mixed with other fibers it should give novel effects. In its monofilament form Caslen is a potential substitute for horsehair in fabrics; in curled staple form it is being used to replace hair in mattresses. Data are given on Caslen's chemical and physical properties and its method of manufacture is noted briefly.

Organic chemical industry. G. S. J. White, Imperial Chemical Industries Ltd. *Textile Mfr. 75*, 260-1 (June, 1949).

Examination of the physical properties of 4 chemical fibers, from different polymer classes, Vinyon N, Orlon, nylon and Terylene, reveals them all to have high rather than low tenacity (2.53-5.6 g/den.), approximately 20% extension at break, to be white or near white in color, to display silk-like work of rupture, to have low moisture regain, and low density (1.14-1.36). The question as to whether these are the common properties desired in new textile fibers cannot be answered until the properties of fabrics, such as drape, resilience, crushability, resistance to abrasion and dimensional stability can be related to the physical properties and chemical constitution of the fibers and yarns from which the fabric is constructed. Similarly more information is needed about the relation between physical and chemical properties of a fiber and its processibility.

Outlook for Vinyon N. Anon. *Am. Wool Cotton Reptr. 63*, 73, 75 (July 14, 1949).

Vinyon N possesses chemical, fire, and water resistance properties, good electrical characteristics, high resistance to insects, fungus, and mildew, and thermoplasticity. Applications for Vinyon N may be found in men's socks, work garments, dye nets, draperies, seat covers, etc.

Raw materials for rayon. Anon. *Am. Wool Cotton Reptr. 63*, 29, 34 (July 14, 1949).

Purified wood cellulose is reported to be the largest source of supply in the manufacture of rayon and acetate yarn and staple fiber. The general characteristics that are most important in these wood pulps are chemical reactivity, uniformity of chemical and physical properties, and freedom from impurities. The acetate process requires wood cellulose of very high alpha cellulose content and the highest degree of purification. The wood cellulose for high-tenacity yarns can be somewhat lower in alpha cellulose content and refinement provided the molecular structure and weight are uniform and of a high order.

Rayon promises broad changes in wool industry. E. S. Kennedy, Am. Viscose Corp. *Am. Wool*

Cotton Reptr. 63, 53, 55 (July 14, 1949).

Developments in processing, dyeing, finishing, and the like of rayon staple, rayon tow, etc. are reviewed. These improvements are expected to expand and possibly revolutionize the woolen and worsted industry.

Spun rayon developments. Alan C. Lorin. *Textile Age 13*, 32, 34, 36, 38-9 (July, 1949).

The economic position of rayon staple fibers is compared to other fibers such as cotton, wool, nylon, etc. Possibilities for spun rayon in blends and fabrics are also discussed.

Use of new fibers. Anon. *Am. Wool Cotton Reptr. 63*, 21, 95 (July 14, 1949).

Celcos fibers are produced and crimped in predetermined lengths and sizes, in both bright and dull lusters, and combine the best features of viscose and acetate fibers. They have an ease of processing, can be dyed with either acetate or cotton dyes, and have an absorptiveness for resin and other finishes. It is reported that the new fabrics are ideal for women's and men's suitings, dress goods, etc.

Vicara—a new fiber. Grace R. Wildermuth, Virginia-Carolina Chem. Corp. *Textile Bull. 75*, 67-9 (Apr. 1949); *Textile Recorder 67*, 71-2 (June, 1949); (Condensation) *Textile World 99*, 139 (June, 1949).

See TTD: *6*, 525.

YARN PRODUCTION B

Assessment of yarn quality. M. W. Townsend, Wool Industries Research Assn. *Textile Mfr. 75*, 259-60 (June, 1949).

Worsted yarn faults are classified as slubs, which can usually be thinned out or pared down to uncover the core of yarn they surround, or spinning faults which cannot be pared off. General conclusions, drawn from results that are considered a fair representation of the worsted trade as a whole, are that slubs occur at the rate of about 3.3 per pounds of yarn and spinning faults at the rate of 1 per 2 pounds of yarn. For a 2/48 worsted the slubs occur once every 4,000 yards of yarn and the spinning faults once per 24,000 yards of yarn; but in a 57-yard piece of cloth these rates will cause 198 slubs and 30 spinning faults.

Behavior of the crimping of different staple fibers during manufacture into yarn in cotton spinning. K. Thiessen. *Kunst. u. Zell. 27*, 75-83 (1948).

This is a study of the behavior of crimping during the individual stages of manufacture on machines in a cotton mill. In Part II commercial fibers are investigated. The third part is concerned with the fullness and elastic fluffiness of the commercial fibers.

Blend for new, better fabrics. Robt. A. Smith, Am. Viscose Corp. *Am. Wool Cotton Reptr. 63*, 71 (July 14, 1949).

A discussion is given on the advantages of blending synthetic fibers with wool to give new and better fabrics.

Modern jute manufacture. S. A. G. Caldwell. *Fibres 9*, 86-9 (Mar. 1948); 131-4 (Apr. 1948); 176-9 (May, 1948); 293-6 (Aug. 1948); 437-40 (Nov. 1948); *10*, 7-10 (Jan. 1949); 100-02 (Mar. 1949); 159-62 (May, 1949).

This series of ten articles has dealt with the processing of jute from the opening through the weaving operations.

Spinning tests. Friedrich Münch. *Melliand Textilber. 30*, 3-5 (Jan. 1949); *in German.*

This is a critical examination of various methods and test machines for spinning samples which will help the manufacturer to ascertain quickly the yarn properties of various test mixtures to be expected under normal production conditions.

Tow to top systems. Anon. *Am. Wool Cotton Reptr. 63*, 16-17, 84-5 (July 14, 1949).

One of the latest developments in machinery for tow to top processes is the Pacific Converter which cuts synthetic filaments to the proper length, blends them with worsted fibers, reduces the mass of fibers to a suitable weight, and delivers them in the form of sliver. The processes of opening, picking, carding, and partially of gilling and drawing are eliminated. Other systems of converting continuous filaments into staple fiber are the Perlok tow-to-top system, the Campbell and Greenfield systems. These systems differ from the Pacific Converter in that the filament cannot be blended at the process, and the sliver must be put through several stages of gilling and drawing. The direct spinner and two-for-one twister are discussed as to their value for synthetic filaments.

Fiber preparation B 1

Dry scouring greasy wool. P. Townsend. Australian P. 132 341, Jan. 23, 1947.

Wool fed into a hopper is opened up by a spiked

beater and is blown along a pipe into a turbulence chamber together with powdered dehydrated kaolin, which is also fed into the hopper. The wool and kaolin are then fed into rotatable chambers which are in communication with each other, so that after a treatment in the first chamber the material may recieve further treatment in the second chamber. Each chamber contains a plurality of agitating and tossing plates which are connected by a conveyor, the wool being tossed and agitated but not being rotated. Slits allow the separation of excess kaolin from the wool, and air force and suction for feeding wool and kaolin to the chamber and for recirculation of used kaolin is provided by a fan. A further fan passes contaminated kaolin from the chamber to textile bags.

Effect of temperature in the scouring of merino wool on subsequent processes. P. P. Townsend & W. Tweedie, Univ. of Leeds. *J. Textile Inst. (Trans.) 40*, T389-98 (June, 1949).

The effect of the temperature of the scouring liquor on the subsequent behavior of merino wool during its conversion into worsted yarn is discussed. Three batches of 64s Australian wool were scoured in 4 different temperature ranges using a standard concentration of scouring agent. When tests were made for fiber breakage, nep formation during carding, tear in combing and yarn strength in spinning, it was found that the wool scoured at the lower temperatures gave less breakage in carding, had better tear in combing, and had a greater fiber length in the top. No difference in neppiness was apparent. Conflicting data were obtained for the role played by temperature of scour on the yarn strength.

Fringe roll improves lap uniformity. Anon. *Textile Industries 113*, 175, 177 (Aug. 1949).

A fringe roll for the feed assembly on pickers is described and illustrated with a diagrammatic sketch. Lumps and bunches are broken up and disintegrated so that the stock reaching the screens is uniform with less tendency of the lap to split.

Loading machine for wool. H. M. A. Duvivier. Australian P. 132 567, June 24, 1946.

A charging or loading device for wool or other textile material, especially used in carbonization operations, comprises a hopper into which the wool is shot, a feeding member, having teeth fixed to a shaft and forming compartments to remove the wool at the lower end of the hopper, and a beater having teeth. The speed of rotation of the beater is considerably higher than that of the

feeding member and will remove the wool of the latter in order to shoot it on to a travelling band. The earth contained in the wool will be discharged through holes in the casing of the beater. The loading hopper constitutes a storage space which will keep the wool product free from acid during renewal of the bath.

Photoelectric apparatus for measuring lap uniformity having means to minimize tension on the lap. Ralph A. Rusca & Chas. L. Sens (to U. S. of Am.). USP 2 466 615, Apr. 5, 1949.

An apparatus for determining variations in the uniformity of a picker lap comprises a plate for supporting the lap with an aperture in the plate. A light source projects a beam of light through the aperture and a light-sensitive means receives the beam after it passes through the aperture. A thickness of lap is interposed between the light source and light-sensitive element by a power operated lap advancing and withdrawing means which moves the lap at the same speed to minimize tension. Uniform thickness of the lap at the aperture is maintained by a free roller adjacent to the aperture and spaced at a predetermined distance from the plate. A single-point graphic recorder operated by the light-sensitive element (photo-electric cells) indicates the variations in uniformity.

Carding and combing B 2

Carding practices studied by Georgia men. Anon. *Textile World 99*, 116-17, 188, 190 (June, 1949).

This is a condensed report of the Textile Operating Executives of Georgia survey of mills on carding practices. Savings were reported on one-shot lubrication of pickers; continuous card strippers are fairly widely used; use of traverse grinders on flats is discussed. Other questions covered were: mill practice on clothing cards, life of fillet on grinding rolls, causes of neps in webs, and solid vs. spot creeling of finisher drawing frames.

Cotton-mill men scan card-room methods. Anon. *Textile World 99*, 129, 214, 216 (June, 1949).

The Southern Textile Association, Eastern Caroline Division, discussed extemporaneously many card room practices. Included were: causes of neps in the card web, card and drawing sliver tolerance and control, compressed sliver calendar rolls on drawing frames, and magazine feeding of sliver cans at the lap winder. Individual mill experiences on the above topics are given.

Drive mechanism connected with carding engines. Irvin Marsden (to Platt Bros. & Co., Ltd.). USP 2 466 606, Apr. 5, 1949.

An improved drive mechanism for woolens, worsted, or roller and clearer carding engines is provided where the speed of the workers can be varied to rotate at any required speed without altering the speeds of the other rotating parts of the carding engines. The mechanism also enables the direction of rotation of the workers to be reversed when required. Variable speed gearing is arranged between the carding cylinder and worker roller.

Improved wool card feed system. Anon. *Textile Industries 113,* 92-3 (July, 1949).

An improved wool card feed system includes a series of bins provided on the floor above the card feed boxes with metal chutes connecting the bins with each of the card feed boxes. The chutes are kept full of stock at all times so that a uniform amount of stock is fed into the breaker card hopper. This new system reduces labor costs, improves the quality of work, gives a more uniform feed, and aids in running dyed stock.

Lap-handling system pays for itself in a year. P. M. Thomas. *Textile World 99,* 110-11 (May, 1949).

A brief, illustrated description is given of a lap-handling system installed at the Alexander City, Ala., plant of Avondale Mills. Reduced manual labor, a smaller number of operations, and reduction in torn laps and aisle traffic were noted. Future plans call for the installation of an automatic unloading unit.

New card clothing cuts need for stripping. Gustav Zellnik. *Textile World 99,* 135, 274 (Apr. 1949).

A new type of woolen card clothing that looks like a cross between garnett wire and flexible clothing has to be stripped every 2 or 3 weeks instead of daily. A plastic face on the foundation is largely credited with the reduced stripping. The shape of the wire itself is torpedo like, which provides a streamline effect, and is of a heavy gage. In one installation, a cylinder has been in operation for 15 months and has not needed grinding.

Space saving individual card drives. Anon. *Textile Industries 113,* 84-5 (Aug. 1949).

Individual card drives (at Cone Mill's plant) are reported to be safer, require less space, give a cleaner card room with reduced fire hazards, etc. These drives consist of an electric motor mounted

on a plate attached to the card arch, a variable pitch V-belt pulley, and a speed-reduction unit mounted directly on the main cylinder shaft.

Trumpet for drawing frames. Ira L. Maltba (20% to Carl A. Wilson, 20% to Yates D. Smith, 20% to Dean French & 20% to Julius T. Sanders). USP 2 476 379, July 19, 1949.

This invention provides an improved trumpet for a drawing frame which is formed with a restricted entrance passage and an enlarged delivery passage, together with laterally formed openings through the lower portion of the trumpet communicating with the enlarged delivery passage whereby should the trumpets become stopped up or begin to run singles, the extra size of the outlet passage and lateral interconnecting openings will permit the weakened sliver to expand and break, thus immediately stopping the frame.

Drafting and roving B 3

Apparatus for drafting textile fibers. Whitworth F. Bird (Collins & Aikman Corp.). USP 2 471 056, May 24, 1949.

A drafting device for textile fibers comprises a pair of front drafting members; stock feeding means which include an apron, guiding, supporting, and tensioning means for the apron; a positively driven pressure roller in superposed relation to the apron with rotatable collars on the roller. The collars are in running contact with the apron during operation of the device, and means are provided for positively driving the pressure roller at a predetermined rate.

Blending cottons at drawing. Anon. *Textile Industries 113,* 94-6 (July, 1949).

When Egyptian and American cottons are blended, better runs are permitted with less ends down. It is reported that the blending is better handled at drawing than at opening since the cottons are combed before blending, and separate combing of the different fibers has been found to be more efficient. The experience and practical mill tests of several mills in blending cottons at drawing are discussed with tables given of test results. A mathematical relationship for the strength of a blend is presented.

Combed-yarn mill stops top-roll damage. L. J. Williams. *Textile World 99,* 111 (June, 1949).

Conventional roving traverse motions often cause grooves in top rolls at the ends of the traverse where the motion is reversed. These grooves can be eliminated by a roving traverse driven from

the carriage lifter shaft through a cam and lever arrangement to the traverse bar. This causes the traverse motion to reverse directions at varied places on the roll.

Control of textile fibers during drafting operations. Whitworth F. Bird (to Collins & Aikman Corp.). USP 2 471 058, May 24, 1949.

A drafting mechanism for strands of textile fibers includes means forming a front nip to draw off the fibers as they are being drafted and a stationary strand guide for fibers as they pass forwardly to the front nip. The stationary guide extends lengthwise along the path of the fibers for a predetermined distance. Means are provided including the front nip forming means for moving a strand of fibers in contact with the stationary guide. A rotatable fiber control pin roller initially penetrates into only that portion of the length of the strand in contact with the stationary guide as the pin roll rotates in operation.

Drafting: Reduction of irregularity by —. A. Huberty & F. Monfort. *Proc. Tech. Committee Int. Wool Text. Organisation 2*, 62-7 (1948).

A mathematical relation is deduced between the irregularities of a sliver before and after a given draft. Practical implications of the results are discussed, with some experimental results in support of the theory. (through *J. Textile Inst. 40*, A200 (May, 1949)).

Long draft apron. Bruce R. Billmeyer (to Armstrong Cork Co.). USP 2 470 599, May 17, 1949.

A long draft apron for use in fiber drawing comprises a tubular body of twine disposed in the form of a helix, a wear-resistant layer of synthetic rubber interiorly of the body, an adhesive coating disposed over the body, and a wear-resistant tubular facing of synthetic rubber secured to the body by the coating. The twine is threads, cords, spun yarns, etc. of cotton, flax, silk, nylon, or some other fibrous substance. The synthetic rubber is chosen from the group consisting of a polymerized butadiene acrylic nitrile copolymer, a plasticized polyvinyl chloride, a plasticized polyvinyl chloride-acetate copolymer, an olefin polysulfide, and a polymerized chloroprene.

Pacific Converter. Anon. *Textile Industries 113*, 99, 103 (Aug. 1949).

The Pacific Converter consists of 4 major assemblies: (1) cutter or stapler; (2) drafting section; (3) accumulator; and (4) crimper and can coiler. The converter is capable of cutting, blending, and drafting synthetic and natural fibers in any ratio up to 100% pure of each while in tow or top form. It is used in conjunction with Pin Drafters in Bradford, Continental, or modified American systems.

Roving frame stop motion. Anon. *Textile Industries 113*, 105, 107, 195, 197 (Aug. 1949).

The design and operation of a new and simple roving frame stop motion (USP 2 129 639) are described. The stop motion is claimed to stop the frame as soon as there is any defect in the roving being delivered to the bobbins, such as singlings, doublings, broken ends, plugged flyers, bad piecings, and roll laps. The device can be used on any type of frame and on any fiber or mixture of fibers.

Sliver condensing device. Otto W. Schlums (to Whitin Machine Works). USP 2 470 055, May 10, 1949.

A sliver condensing device is claimed for long draft apparatus having a pair of draft rolls and a pair of aprons. The device is positioned between the rolls and the aprons and normally engages the rear surfaces of the draft rolls. The device is normally supported by the slivers only and has rearwardly projecting lugs which engage the aprons and support the device when the sliver is missing.

Textile machine unit for drafting fibers. Frank H. Carman (to Armstrong Cork Co.). USP/Re 23 117 (USP 2 287 780), May 31, 1949.

A long draft apron for use in fiber drawing comprises a seamless, tubularly woven fabric foundation in slightly extended condition and inextensible radially. The interior of the foundation is impregnated with a synthetic rubber composition; and a seamless, oil-resistant, flexible wearing surface of synthetic rubber composition is provided on the exterior of the foundation. The impregnating composition and wearing surface are vulcanized in situ on the foundation.

Spinning B 4

Bobbin board. Raldo E. Shipman. USP 2 475 724, July 12, 1949.

A bobbin board comprises a rectangular frame, a grid structure within the frame made up of longitudinal and transverse strips disposed edgewise in planes perpendicular to the plane of the frame and crossing each other at substantial right angles and a bobbin-holding pin secured to the strips at each crossing point.

Bobbin clutch. Geo. West (to Whitin Machine Works). USP 2 472 240, June 7, 1949.

A bobbin clutch for spindles having a blade and a driving whirl mounted on it is claimed. The bobbin clutch comprises a one-piece bushing with a head mounted on the blade, a flange at the bottom of the bushing, and a slotted portion connecting the head and the flange. The flange has an inner annular recess. An assembly of resilient bobbin-clutching fingers has an integral annular connection between their lower ends and is positioned in the slots of the body portion. The connection is positioned and seated in the recess of the flange.

Don't blame static if cots lap up. C. W. Bendigo. *Textile World 99,* 127, 264, 266, 268 (Apr. 1949).

As a result of investigations by John W. Baymiller, Armstrong Cork Co., it has been shown that lapping is caused by the Helmholtz electric double layer which binds moisture to the fiber and cot; the 2 water layers are pressed together and become one thus binding the fiber to the cot. Baymiller found that this could be overcome by incorporating into the cot compound certain electrolytes, e.g., animal glue. It has been demonstrated also that static does not enter into lapping up. U. S. patents 2 450 409 and 2 450 410 have been granted for roll covers based on Baymiller's discoveries (See TTD: *5,* 754).

Georgia operating executives discuss spinning operations. Anon. *Am. Wool Cotton Reptr. 63,* 9-10 (June 23, 1949).

A report on the last 5 questions on spinning discussed at the forum of the Textile Operating Executives is given.

Mounting means for spinning rings. Hermann Mäder (to Actiengesellschaft Joh. Jacob Rieter & Cie.). USP 2 469 658, May 10, 1949.

An arrangement for mounting traveler rings in a ring rail in ring spinning and ring twisting machines is claimed. The rings are provided with an outer flange for bearing against an outer face of the ring rail. The rings are also provided with a neck extending into a bore in the rail. The neck has a conical outer surface enlarging away from the flange and extending the entire extent of the wall of the opening in the ring rail. A pressure applying means acts transversely of the neck forcing the conical surface against the wall of the rail opening to wedge the ring between the conical surface and ring flange.

New spindle cuts maintenance at Greenwood. L. J. Williams. *Textile World 99,* 137, 212, 214 (June 1949).

The installation of 45,800 New Era spindles at Greenwood Mills is described. The spindles are packed with lubricant at the factory and no lubrication is done at the mill. The construction of the spindle is revolutionary in that the blade does not revolve. Reduced maintenance, less vibration and less power consumption are claimed.

Rayon staple fiber: spinning. Textieltechnische Dienst A.K.U. *Enka en Breda Rayon Rev. 2,* 137-48 (1948); *in Dutch.*

An illustrated account is given of the various processing methods applicable to rayon spinning, including the following: spinning of short-staple rayon fibers and of long-staple (up to 75 mm) rayon fibers on the cotton system; spinning of long-staple (up to 150 mm) on the worsted system; spinning of long-staple (up to 200 mm) on the schappe system; spinning of long-staple fibers on the coarse flax system; spinning of short- and long-staple fibers on the 2-cylinder and condenser system; and spinning of short- and long-staple fibers on the waste spinning system. (through *J. Textile Inst. 40,* A186 (May, 1949)).

Rayon staple spinning and fiber blending possibilities. Anon. *Textile Recorder 67,* 58-61 (June, 1949).

This is a review of a paper presented by H. Ashton, Courtaulds Ltd., at the Textile Conference, Amsterdam, Apr. 11-12, 1949. Attention is drawn to the freedom enjoyed by the rayon staple producer and spinner from limitations, imposed by nature in the natural fibers, on fiber dimensions and characters, and their effect on the choice of fibers to spin. Data are presented on the effect of staple length and filament denier on yarn strength and upper spinning limit. As an example it is pointed out that increase of staple length from 1-7/16 in. to 2½ in. with 3.0 denier "Fibro", makes it possible to lift the spinning limit from 20s to 30s cotton count. Also discussed is the extension of high draft techniques to long staple; the Ambler system capable of high drafts with staples of 6 in. or longer is noted. Data are presented on blending possibilities and properties of yarns from manufactured fiber blends, particularly blends of "Fibro" with cotton, wool and ramie.

Spinning machine. Daniel W. Maxham. USP 2 453 802, Nov. 16, 1948.

A spinning machine having a strand fiber twisting means includes a rotatable member with a central

opening and spaced-apart twist pins projecting into the opening. A placer means is disposed closely adjacent to the twister means to project fibers from the strand material into the paths of the twist pins, and a carrier means conveys the strand material to the placer means. A plucking means intermittently urges the strand material to the carrier means with other means provided to steadily urge strand material to the plucking means.

Spinning ring. Hyatt B. Atwood & Chas. Fillinger (to Herr Mfg. Co., Inc.). USP 2 470 736, May 17, 1949.

A spinning ring for a traveler has traveler-engaging bearing faces at its inner and top sides and intersecting transverse and upright parts opening onto the faces. A lubricant well is applied to the ring in lubricant-conducting relation to the ports. A wick in lubricant-conducting relation with the well extends through the transverse port for feeding the lubricant to the inner bearing face of the ring. An insert extends lengthwise through the upright port for dividing it into a plurality of capillary lubricant-conducting tubes.

Spinning traveler. R. S. Audley. *Fibres 10,* 166-9 (May, 1949).

This discussion includes traveler speeds and twist insertion, ring traveler types, traveler clearings, and changing. A chart showing 38 strange traveler designs which were patented from 1820-1883 is given.

Winding and spooling B 5

Constant speed yarn winding. Harold W. Ball. *Am. Wool Cotton Reptr. 63,* 11, 14, 43 (June 23, 1949).

Constant yarn speed in winding yarn from a free supply may be obtained by controlling the speed by an electronic unit, such as the thy-mo-trol, and by the use of some form of variable speed pulley. The advantage of the latter drive is that only one variable speed unit is needed for a multiple number of spindles while the former type requires one for each spindle. In taking up yarn from a constant speed source, a system should be used which will allow a slippage to take care of variations in constant yarn speed from the supply. A torque motor, a motor controlled by a dancer roll, a slip spindle, or a hydraulic motor may be used.

Double twist spindles; the principle of double twist and a review of the literature. G. Dakin & E. J. L. Smart. *J. Textile Inst. (Trans.) 40,* T268-98 (May, 1949).

The literature review portion of this paper is based on 80 British patents, 6 foreign (i.e., German, U. S. and French) patents, and 26 references to periodical literature.

Feed roll assembly. Albert E. Winslow (to Universal Winding Co.). USP 2 477 106, July 26, 1949.

In the use of a feed roll for feeding yarn in such places as on a twisting frame, it has been usual to stop the action of the feed roll when any one of the ends which leads to the feed roll breaks by moving the feed roll itself so that it is lifted out of driving engagement with some means for driving the same. This invention provides a feeding unit which will be individual for each of the plied yarn ends and so arranges this unit that, if one yarn end breaks, the unit will become inoperative, while other similar units on the frame will continue to operate.

New yarn tensioning device to solve crepe yarn winding problems. Anon. *Textile Recorder 67,* 76-7 (June, 1949).

This device consists of an adjustable tension bar which increases the length of traverse of yarn threaded through eyelets between a tension gate; it is recommended for the over end winding of crepe and other kinds of hard twisted yarns. The device will eliminate "snarls" from the winding process.

Revolving thread guiding flier. Albert Nau-Touron (to Societie a responsabilite limitee Fonderie De Precision). USP 2 451 352, Oct. 12, 1948.

A revolving thread guiding flier for textile machines, such as throwing, reeling, winding, or doubling machines, is claimed. The flier consists of a body mounted rotatably on the spindle of the machine with arms projecting from the body. A rod is secured to one of the arms parallel to the axis of the spindle, and a traveler is freely mounted on the rod so as to slide along it. Means are provided for guiding the yarn through the traveler.

Silk throwsters' craft has overcome many difficulties. R. H. S. Aspinwall, Brocklehurst-Whiston Amalgamated Ltd. *Brit. Rayon & Silk J. 26,* 60-2, 74 (Mar. 1949).

This is a discussion of the problems peculiar to the throwing of nylon.

Simplified features of new pirn winder. Anon.

Brit. Rayon & Silk J. 26, 75-6 (June, 1949); *Textile Recorder 67,* 73-4 (June, 1949).

This is a description of a pirn winder made by Wildt and Co. Ltd., capable of handling rayon staple and mixture yarns as well as the natural fibers. It is capable of speeds up to 4,000 rpm. The machine is of the spindleless type. The pirns are doffed and empty ones started by hand.

Stop means for feed roll units. Albert E. Winslow & Eugene Eppler (to Universal Winding Co.). USP 2 472 966, June 14, 1949.

A yarn handling apparatus comprises a spindle for a take-up package, feed rolls for feeding yarn to the take-up package, a gear fixed on the axis of one of the feed rolls, and a pivoted bracket carrying a second gear movable from driving to non-driving position with the first gear. Means are provided for driving the second gear and for moving the second gear to non-driving position upon the breaking of the yarn end. The invention is particularly designed for use on a twisting frame.

System saves money in throwing combinations. John Lucas. *Textile World 99,* 139, 222, 224 (May, 1949).

This is a discussion of the manufacture of combination yarns. Detailed suggestions are given for improving quality and efficiency.

Thread guide. Raldo E. Shipman. USP 2 475 725, July 12, 1949.

A thread guide for textile machines comprises a hollow holder shaped to seat upon the usual traverse bar, the holder having a transverse opening therethrough, and a thread engaging element formed of a V-shaped strip U-shaped in cross-section, and made of wear resisting material, enclosed within the holder and registering with the opening.

Yarn twisting apparatus. John L. Meade. USP 2 463 636, Mar. 8, 1949.

A yarn twisting apparatus comprises a carrier for a yarn supply package with means for suspending the carrier; a framework revolubly supported on a fixed support with means for supporting the carrier on the framework for relative rotation; yarn twisting means; means for feeding the yarn from the package and for transferring the twisted yarn from the twisting means to the feeding means. The carrier is maintained fixed in space by a disc supported for universal tilting movement on the carrier. The disc, support, and carrier have interengaging surfaces.

Yarn processing B 6

Cord processing apparatus. Wingfoot Corp. Australian P. 132 486, Oct. 21, 1946.

A thread processing, or doubling and twisting apparatus employing thread supply packages, comprises means joining threads, twisting means, positively driven feeding means, delivering the joined threads to the twisting means at a substantially constant rate, burnishing means and means actuating the burnishing means at a rotational speed slightly in excess of that of the feeding means.

Cord stretching and compressing device. Wingfoot Corp. Australian P. 132 482, Oct. 4, 1946.

An apparatus for stretching and compressing doubled threads comprises a positively driven stretching means, compressing means receiving the doubled threads from the stretching means, and means such as gearing for actuating the compressing means at a speed in excess of that of the stretching means.

Textile thread carrier. Chas. K. Dunlap (to Sonoco Products Co.). USP 2 470 549, May 17, 1949.

Thread carriers, such as spools or bobbins, comprise a fibrous tubular body formed with integral reinforcing ribs and conical end portions forming heads on the body. The end portions and reinforcing ribs are formed by folding the tubular body at intervals parallel with its longitudinal axis but in a longitudinal extent terminating short of each end of the body. The folds thus formed are flattened against the tubular body so that the reinforcing ribs are set in place. The ribbed construction is well adapted for forming thread cores for use in dyeing operations. The wall portions of the body intermediate the folds are perforated.

Thread tensioning device. C. Christiansen & G. O. K. Rusch. Australian P. 132 575, June 13, 1946.

The threads or yarns are passed around 2 drums interconnected by means of toothed wheels. The drums are set in rotation by the pull of the yarn which slides around one of the drums in a direction opposite to the direction of rotation of the drum.

Special yarns B 7

Fancy yarns. VIII-IX—Machinery. A. T. C. Robinson. *Fibres 10,* 84-6 (Mar. 1949); 174-6 (May, 1949).

These 2 articles are devoted to a discussion of the

machinery used in the production of fancy yarns. For Parts I-VII see TTD: *6*, 366.

Yarn products B 8

Machine for the manufacture of ropes, cords, knitting wool, and the like. Morris Kaplinsky. USP 2 476 736, July 19, 1949.

This invention provides a machine for the manufacture of ropes, cords, knitting wool and the like which comprises a plurality of groups of spindles, all the spindles save one in each group being adapted to rotate in the same direction and the odd spindle in each group being rotatable in the opposite direction. When employing the machine for the manufacture of knitting wool, the slivers are spun on the forward spindles and the subsequent twisting (which has to be done in a direction opposite to that of the spinning) is performed on the reverse spindles. In the manufacture of cord or rope, the yarn is spun on the forward spindles whereafter it is stranded or twisted and laid by the reverse spindles.

Performance of rayons in engineering applications. J. K. Berry, Courtaulds Ltd. *Textile Mfr. 75*, 258-59 (June, 1949).

Interest in rayon as a tire cord is being stimulated by the use of synthetic rubber which causes higher operating temperatures than natural rubber; therefore, a cord which does not lose strength on drying is of considerable importance. Under bone dry conditions the breaking load of a rayon cord is increased by 20% in contrast to a cotton cord which loses nearly 20% in strength. Thus when the tire is running and the moisture content of the cords is low, rayon cords have a marked advantage in strength. Also discussed are the uses of rayon as a reinforcement for fabrics for conveyor belts, power transmission belting and rubber hose.

Rope kinking. David Himmelfarb, USN. *Fibres, Fabrics & Cordage 16*, 154-5, 163 (May, 1949).

Data are presented on tests made on kinked ropes showing the relation between rope strength and severity of the kinks. Tests on ropes in which kinks were formed both in the rope and the strands show that a kinked section has a lower breaking strength than the unkinked rope.

Tire cord structures. J. E. McCarty, Goodyear Tire & Rubber Co. *Am. Wool Cotton Reptr. 63*, 35, 77 (July 14, 1949).

Tire cord must have relatively high tenacity in proportion to its size; it must have a satisfactory

elongation under load; and it must have the ability to be rapidly flexed an almost infinite number of times without deteriorating from fatigue. Present practical tire cords are limited to cotton, rayon, wire, and nylon. A physical property chart of various tire cords is given, and it is noted that the strength of nylon is more than twice that of high tenacity rayon.

Yarn applications B 9

Belting. Saml. P. Parker (to Callaway Mills Co.). USP 2 473 607, June 21, 1949.

A fabric for use as a reinforcement in belting comprises a plurality of cables lying side by side and extending lengthwise of the fabric. Each cable consists of a plurality of fibrous strands twisted together. Cross strands pass between the strands of the individual cables and hold the cables together, the total weight of the cross strands lying between about 1/4 and 3/4 of the total weight of the cables. The cable twist of the strands in the cables is defined by the formula

$$T = K\left(\frac{.95n}{p}\right)^{.71}$$

in which T is turns of twist per inch, n is unit size of cable strands expressed in the cotton count, p is number of cable strands in each cable, and K is a constant lying between about 4.6 and about 10.5.

Yarn testing and numbering B 10

Bobbin formation: Decrease in weight of sliver and roving in —. F. Monfort. *Proc. Tech. Committee Int. Wool Text. Organisation 2*. 55-61 (1948).

Measurements of the weight per unit length of slivers were made at different positions of the sliver on packages from balling heads. In general, the weight per unit length was less at the outside of the package than at the middle of it. Possible reasons for this difference are suggested. (through *J. Textile Inst. 40*, A200 (May, 1949)).

Irregularity of yarns, rovings, and slivers: Contribution to the study of —. A. M. Van den Abeele. *Proc. Tech. Committee Int. Wool Text. Organisation 2*, 48-54 (1948).

It is shown that the variation in the number of fibers per cross-section in a "completely random" yarn is much less than is usually believed. (through *J. Textile Inst. 40*, A200 (May 1949)).

Quick and simple method of obtaining the mean

and its standard error and the coefficient of variation in textile tests with special reference to the measurement of yarn strength. B. K. Chakrabarti. *J. Textile Inst. 40*, P370-78 (Apr. 1949).

This paper suggests a convenient method of recording data in strength and other similar tests and of quickly calculating the mean and its standard error and the coefficient of variation. The method outlined is applicable only where the specimens for test are collected at random from a big bulk and when there is sufficient ground to suppose that the frequency distribution of the bulk is normal.

Yarn irregularity: Comparative measurements. Wool Industries Research Assn. *Proc. Tech. Committee Int. Wool Text. Organisation 2*, 35-47 (1948).

The Technical Committee of the I.W.T.O. arranged for samples of 3 yarns to be sent to 6 cooperating laboratories in Europe, where the irregularity of each yarn was measured by the method usually used by the particular laboratory. The methods are described, and details of the results are given and compared with the appearances of fabrics woven from the 3 yarns. Some of the measurements rank the yarns in the same order as the appearance of the fabric, but inconsistencies of the different methods of assessing irregularity show that no single measure is sufficient completely to describe the yarn irregularity. (through *J. Textile Inst. 40*, A200 (May, 1949)).

Yarn irregularity: Use of correlograms for measuring —. D. R. Cox & M. W. Townsend. *Proc. Tech. Committee Int. Wool Text. Organisation 2*, 28-34 (1948).

The "variance-length" curves, relating irregularity to the length within which it was measured, were derived for 3 different yarns from correlograms of yarn diameter. It is shown that the results compare well with those derived from other methods of drawing the curves, and that no single measure of irregularity is adequate to rank the 3 yarns for different aspects of the irregularity. (through *J. Textile Inst. 40*, A200 (May, 1949)).

FABRIC PRODUCTION C

Handling nylon, cutting costs features knitting show. Anon. *Textile World 99*, 118-23, 172 (June, 1949).

Many improved machines and supplies were exhibited at 1949 Knitting Arts Exhibition in Atlantic City. These include tricot, warp-knitting, some throwing and finishing equipment, and supplies of various kinds.

Nylon improves strength in viscose staple blend. Anon. *Textile Industries 113*, 86-8 (Aug. 1949).

Nylon staple and viscose staple blended fabrics are reported to have increased strength and greater resistance to abrasion than all-nylon fabrics. Details of blending, carding, drawing, spinning, winding, warping, slashing and weaving are discussed.

Slashing and weaving practices described at Alabama meeting. Anon. *Textile Industries 131*, 124-5, 127, 129, 131 (July, 1949).

A report on slashing and weaving problems discussed at the spring meeting of the Alabama Textile Operating Executives is presented. The problems included synthetic squeeze rolls, moisture control maintenance, size viscosity meters, endless check straps, quality control in weave room, quilled filling *vs* spun filling, and friction gear breakage.

Yarn preparation C 1

Homogenization of starch sizing. Anon. *Am. Wool Cotton Reptr. 63*, 50 (June 23, 1949).

Continuous production of more uniform starch sizes with fewer kettles is reported when homogenizers are used in the preparation of the sizes for slashing. The starch mixture is heated to the swelling point, pumped into the homogenizer and subjected to pressure. It is converted mechanically by shearing action, velocity, and impact. It is unnecessary to hold the starch at high temperatures in the cooking kettles for long periods of time.

Improved size for nylon filament yarn. Anon. *Textile Industries 113*, 181 (July, 1949).

Type 2, an improved resin sizing material, for sizing nylon yarn is reported to eliminate dusting.

Sizing aromatic polyester yarns. Imperial Chemical Industries Ltd. Australian P. 132 916, Mar. 18, 1947.

A process for sizing with filament yarns composed of aromatic polyesters, such as glycol terephthallic acid resins, comprises impregnating the yarns with an aqueous solution of partially hydrolyzed polyvinyl acetate and either boric acid or borium chloride or a water soluble resin obtained by condensation of an alkylol urea with formaldehyde.

Sizing polyester yarns. Imperial Chemical Indus-

tries Ltd. Australian P. 132 917, Mar. 18, 1947.

A process for sizing aromatic polyester yarns composed of aromatic polyesters of the glycol terephthalate type comprises impregnating the yarns with an aqueous film forming solution of a protein.

Sizing aromatic polyester yarns. Imperial Chemical Industries Ltd. Australian P. 132 918, Mar. 18, 1947.

A process for sizing aromatic polyester yarns composed of the aromatic polyester of the glycol terephthalic acid type, comprises impregnating the yarn with an aqueous liquid comprising a film forming material which is tacky in the air dried state and which is dispersible in an aqueous liquid.

Testing for sizes for continuous filament yarns of high filament strength. E. Bradbury. *J. Textile Inst. (Trans.) 40,* T299-310 (May, 1949).

Two rapid small-scale methods are described for assessing the weavability of sized continuous filament yarns of high filament strength, such as nylon. The Tape Weavability Test is an accelerated weaving test on narrow warps, in which potential sources of weaving troubles are created in a more frequent and regular manner than would obtain in a normal warp, by cutting single filaments on one or more threads at the back rest of the loom. The ability of the sizing treatment to prevent cut filaments from causing trouble is closely related to its function in normal weaving. The Single-thread Filamenting Test measures the tendency of a cut filament to peel away from the parent yarn under the influence of bending and rubbing against suitable surfaces, and provides an index of one of the most important aspects of the weaving behavior of yarns of high filament strength. The test is best used as a rapid sorting test to weed out unsuitable sizes, as a preliminary to the more thorough examination of the more promising sizes by the Tape Weavability Test.

Warp bobbin stripping machine. Anon. *Textile Industries 113,* 183 (July, 1949).

A brief note is given on a new warp bobbin stripping machine for cottons and rayons. It is reported to strip the yarn down to the last thread without touching or injuring the bobbin head or barrel.

Warp preparation. W. Barker, Ashton Bros. & Co. Ltd. *Textile Mfr. 75,* 279-81 (June, 1949).

This is a discussion of the various systems of winding used in warp preparation. Factors such as yarn clearers (comb *vs* slot), winding speed variation (upright spindle *vs* horizontal drum drive), and the value of automatic winders are considered from the standpoint of operating efficiency.

Weaving C 2

Capitalizing on nylon. Nylon edges into garment field. Nylon's magical sales appeal. *Am. Wool Cotton Reptr. 63,* 57, 59, 61, 63, 65 (July 14, 1949).

A radical expansion in the use of nylon yarn in fabrics is due to the desirability and physical characteristics of nylon. Various constructions and weaves of nylon fabrics, with information as to their use and why they are desirable, are presented.

Causes of rayon defects are frequently confused. Albert Frantz. *Textile World 99,* 135, 216, 218, 222 (June, 1949).

Cloth inspectors must be taught to recognize the cause of defects. Variations in filling yarns may cause defects which are sometimes mistaken for temple marks. True temple marks may result from a number of causes. Suggestions are given for the elimination of the conditions causing temple marks.

Change box motion for looms or the like. Wm. H. Baker. USP 2 463 673, Mar. 8, 1949.

A change box motion for looms includes a vertically movable shuttle box carrying means mounted on a lay with a plurality of horizontally movable shuttle boxes independently mounted on the carrying means. Fixed guides and rollers are arranged to cause each shuttle box to have a combined vertical and horizontal movement when the carrying means is moved vertically.

Circular loom. C. Christiansen & G. O. K. Rusch. Australian P. 132 574, June 13, 1946.

A circular loom is characterized in the provision of a presser finger arranged on the section carrier to press weft threads in between warp threads at a point where the angle or opening between the warp threads is larger than at the point where the section comes into action.

Conference on warp breakages in weaving. *J. Textile Inst. 40,* P263-P362 (Apr. 1949).

The following papers, presented at the Conference held at Blackburn (England), Feb. 24, 1949 are given: "Requirements in warp preparation for automatic weaving," by F. C. Sheldon (P263-71); "Effect of sizing on warp breakage," E. Bradbury (P272-76); "Effect of loom settings on warp

breakage," by J. J. Vincent (P277-8); "Collection, analysis and interpretation of end breakage data in preparation and weaving," by G. A. D. Coghland & J. Perry (P279-88); "Some causes and effects of warp breaks," by J. Baines and J. U. Steiger (P289-P300); "Nature and incidence of warp breakages in automatic weaving," by B. J. Brown (P301-16); "Some factors influencing the number of warp breakages in woolen and worsted weaving," by D. C. Snowden (P317-30); "Weaving of continuous filament and long staple spun yarns; some factors affecting warp breakages," by V. Castle & F. Dawson (P331-52); "Distinguishing factors in weavability (The problem of comparing the weaving properties of warps from the view-point of the rayon producer)," by M. M. Taylor (P353-62).

Design and production of rayon moss crepes I-III. A. T. C. Robinson. *Silk & Rayon 23*, 102, 104, 106, 108 (Jan. 1949); 251, 252, 254, 256, 258, 260 (Feb. 1949); 382, 388, 390, 392, 394 (Mar. 1949).

This discussion of rayon moss crepe fabrics covers the yarns and the weave and the construction of the more important variants.

Device for combing warp threads in circular weaving looms. Henri Pelcé (to Saint Freres S. A.). USP 2 477 082, July 26, 1949.

A device for combing warp threads in a circular weaving loom comprises an endless belt, a set of 2 wheels about which the belt is stretched, spikes carried by the belt, the whole system being arranged outside the shed behind the shuttle, partaking of the movement of the shuttle and being so arranged that the spikes on one of the sides of the belt engage the warp threads, the side being substatially tangent to the well at a point located behind the shuttle.

Electric protector mechanism for looms. Clarence R. Kronoff & Victor F. Sepavich (to Crompton & Knowles Loom Works). USP 2 475 505, July 5, 1949.

This invention provides electric controls which stop the motor promptly in the event the shuttle fails to box on time.

Eliminate filling kinks to cut mending costs. Eugene P. Schremp. *Textile World 99*, 131, 133 (June, 1949).

Kinks are caused by the filling forming a loop or series of loops before the lay beats up. There are 4 kinds of kinks: loop, tight, filling stop-motion, and knot kinks. The cause and correction of each of these 4 are given.

Harness stop motion. Hormidas Laplante. USP 2 475 549, July 5, 1949.

A harness stop motion is provided which is so constructed that it can be maintained relatively free of lint, and in which the electric contacts may be positioned to be engaged by the vertical end wires of the harness connectors to close the electric circuit of the loom stop motion.

Importance of the moment of closing the shed. E. O. Hesse. *Melliand Textilber. 30*, 12-4 (Jan. 1949); *in German.*

The importance of the moment of closing the shed when dealing with different types of warp yarns is stressed. When all types of materials are handled with the same closing of the shed, difficulties in weaving occur which may result in the production of goods of inferior quality.

Iridescent rayon shantung. Anon. *Am. Wool Cotton Reptr. 63*, 9-10 (Aug. 4, 1949).

Iridescent rayon shantung fabrics have a 2-color effect produced by the use of a different warp and filling yarn. They also have an irregular bunch or texture effect which is mostly produced in the filling direction. Filament yarns are usually used for the warp and spun yarn of a novelty character for the filling. To a large extent the fabrics are woven with a plain weave.

Is it crepe nylon? Anon. *Am. Wool Cotton Reptr. 63*, 9-10 (July 7, 1949); 30 (July 21, 1949).

A nylon fabric having the appearance and crepe effect of crepe fabrics is analyzed. The warp is of ordinary yarn 40 denier in size and contains 34 filaments. The filling is a corkscrew yarn with a wave or undulating effect and composed of one end of 15 denier nylon single filament and one end of 40 denier nylon 34 filament. The filling contains about 30 turns per inch in a "Z" direction. The weave is plain, but the combination of yarns produces a slight surface irregularity.

Keep cool effects sharp on Glen plaids. Geo. Hart. *Textile World 99*, 127, 226 (May, 1949).

The basic design of Glen plaids is analyzed. An infinite variety of color combinations can be made on the basically simple weave. In finishing Glen plaids over-fulling should be avoided.

Loom. J. Picanol. Australian P. 132 678, Feb. 20, 1947.

To insure permanent lubrication and protect them against dust the driving and transmission elements, located on both sides of the loom, are housed in air-tight enclosures. A lubricating atmosphere is permanently maintained within the

enclosure by an oil bath, or by a projection, or by a combination of these means.

Loom beat-up mechanism. Derrick W. Shimwell. USP 2 471 354, May 24, 1949.

A beat-up mechanism for narrow ware looms comprises a reed having a straight top part and a lower part the end of which extends at an angle to the top part. A link at each side of the loom carries the reed with one end of each link guided in a path parallel to the upper row of warp threads in the shed. A lever is pivoted at one end to the other end of each link; and a pivotal support, turning about a fixed point, for an intermediate point of the lever is provided. A second lever is pivoted to the other end of the lever at one end and turns about a fixed point at its other end. A crank pin is connected with the second lever. The arrangement is such that the link and levers are in line at the beat-up position of the reed, and the reed has a circular movement while the crank pin moves through a considerable arc about its back dead center position relatively to the second lever.

Loom harness. John J. Kaufmann (to Steel Heddle Mfg. Co.). USP 2 472 772, June 7, 1949.

A loom harness includes a heddle frame having top and bottom rails with a pair of heddle supporting rods at the top and at the bottom adjacent to the rails. The heddle supporting rods comprise thin metallic strips removably mounted in the frame with means for supporting the rods intermediate the ends. The means comprise, at each location, a bracket mounted in the rail; a member secured to each rod spaced longitudinally of the rods and detachably engaging the bracket; and means for normally maintaining the members in locked engagement with the bracket.

Loom lubrication. 1-2. Anon. *Textile Industries 113*, 89-91, 187, 189, 191-2 (July, 1949); 92-93, 95, 97 (Aug. 1949).

I—Proper loom lubrication will increase production and decrease the number of worn out bearings, ruined warps, broken crankshafts and picker sticks, split shuttles, fires, etc. A comprehensive discussion is given of the selection of lubricants with recommendations for lubricating heavy-duty, high-speed, light, dobby, and Jacquard looms. Lubrication theories are presented for plain bearings, oil lubricated, and open gears. II—The following subjects are included: care of anti-friction bearings, lubricant application, storage of lubricants, and selection and training of personnel for lubrication in the weave room. Lubrication theories for anti-friction bearings and plain bearings, grease lubricated, are given.

Loom stopping means. Edw. J. Szabo & Paul W. Christley (to Industrial Rayon Corp.). USP 2 471 845, May 31, 1949.

In an electric loom stop motion circuit a filling detector comprises means sensitive to the continuing separation of warp due to lack of filling. The detector is positioned adjacent to the warp and substantially at the fell. The detector is adapted to close a circuit device when raised by the separated warp beyond the position of the detector.

Many new fabric effects possible with rayon. Anon. *Am. Wool Cotton Reptr. 63*, 23, 92-3 (July 14, 1949).

Characteristics of synthetic fibers that are responsible for their large use and distribution in fabrics are discussed. Photomicrographs are given showing combinations of various fibers to obtain different effects.

Mixture fabrics gain many competition successes. Anon. *Silk J. & Rayon World 25*, 42-6 (Jan. 1949).

This is an illustrated analysis of a selection of prize-winning fabrics from the annual competition of the Textile Institute. A large number of the entries featured fabrics of mixed composition and the examples noted in this paper were selected to illustrate the possibilities of this principle in fabric structure.

New Belgian Moquette loom. Anon. *Textile Recorder 67*, 75 (June, 1949).

This new loom, which is used in weaving moquettes and other furniture upholstery fabrics of heavy texture, incorporates a new patented motion which will insert wires in any required order for either uncut or cut and uncut pile, and in one or 2 heights of pile. The motion is independent of the actual loom and if desired it can be fitted into existing looms. The motion can be safely operated with a loom speed of 110 picks per min.

New shuttle eyes for cotton and rayon weaving. Anon. *Textile Industries 113*, 117, 179 (July, 1949).

Brief descriptions of newly developed shuttle eyes for both cotton and rayon weaving are presented. Many of these eyes are reported to be interchangeable in the same shuttle, making possible a saving in shuttle cost on a change in weave.

Passing of warp threads through reeds. Heinrich

Meier (to Zellweger A. G.). USP 2 473 289, June 14, 1949.

In a device for passing warp thread material through a reed having a gap in it, a lower movable reeding member and an upper reeding member are provided. A hook on the lower reeding member is for inserting the warp thread material to be passed through the gap in the reed by mutual cooperation of the reeding members A feeler is for releasing by virtue of the operation of inserting the thread material in the hook. The pair of reeding members is for passing the material through the gap, and a prime mover is for imparting driving movement to the pair of reeding members.

Picker stick. Carl B. Lundstrom. USP 2 470 506, May 17, 1949.

A wooden picker stick for use in looms has integral portions in which wood fibers, in number exceeding the number characteristic of a similar cross sectional area of untreated wood, are bonded together in a transversely compressed state and afford localized densified portions to resist wear and impact. The densified portions are limited to location and transverse extent so that the picker stick has throughout its entire length a zone in which the wood is not densified.

Picker stick. Heinz Menking (to Aluminum Co. of Am.). USP 2 471 532, May 31, 1949.

A metallic picker stick superior in function and of greater life than wooden picker sticks is claimed. The picker stick is of magnesium metal with a substantially I-shaped cross section. Means formed integrally with the stick form a connection to a stick pulling device.

Pneumatic thread holder. Richard G. Turner (to Crompton & Knowles Loom Works). USP 2 476 640, July 19, 1949.

This invention provides a thread compartment having opposite walls in each of which is located a thread notch, the top boundary of which is formed by the cover. The weft ends extend across the thread compartment under the cover and through both of the thread notches, and when the cover returns to its normal position subatmospheric pressures within the thread compartment draw the threads thereinto under the cover.

Pneumatic thread holder for weft replenishing looms. Richard G. Turner (to Crompton & Knowles Loom Works). USP 2 471 847, May 31, 1949.

In a thread control means for the weft ends of reserve bobbins in a weft replenishing loom, a

pneumatic hollow thread holder has a long narrow intake mouth into which extend weft ends attached to the bobbins. A tube, in which subatmospheric pressures exist, extends into the holder and has a thread aperture opening parallel to the length of the mouth. The weft ends are drawn pneumatically into the aperture. The tube extends part way across the holder to locate the aperture intermediate the ends of the intake mouth.

Positive warp let-off principle. Anon *Brit. Rayon & Silk J. 26*, 71-3 (June, 1949).

A new positive warp let-off manufactured by Textomatics Ltd. is described in detail. It is said to be capable of controlling any width and weight of warp on any size or type of beam, and requires no attention whatever from beginning to end of the run. It embodies the use of a worm gearing system operating from a ratchet and pawl by power from the lay sword. The let-off assembly is so mounted as to be free to have a limited swing back and forth, its position controlling the amount of let-off. The device is said to be so accurate that starting places are eliminated altogether.

Rayon core for fine yarns. A. Johnson. *Am. Wool Cotton Reptr. 63*, 43, 45, 79, 81 (July 14. 1949).

Fine fabrics can be woven by supporting the weak fine yarns by means of a stronger one. The 2 yarns can be combined by twisting on ordinary twisting frames or by combining the yarns while one of them is being spun. The latter method is known as the core principle of spinning and is used to eliminate a doubling or twisting process. The use of rayon and nylon as core yarns is discussed with tables of test results on wool-nylon yarns given.

Rayon twill yardage. Anon. *Am. Wool Cotton Reptr. 63*, 12 (June 30, 1949).

A method of determining yards per pound for rayon twills is presented, and tables to assist in the calculations are given.

Ruti four-box motion. W. Middlebrook. *Textile Mfr. 75*, 268-71 (June, 1949).

This is a technical description of the special features and method of operating the 4-box motion on the Ruti loom.

Seconds can be reduced in piece-dyed worsteds. Eugene P. Schremp. *Textile World 99*, 141, 210 (May, 1949).

Defects in piece-dyed worsteds are discussed and suggestions are given for preventing them.

Simple holders economical for dropping warp-stop wires. H. E. Wenrich. *Textile World 99*, 125, 258, 260, 263, 264 (Apr. 1949).

Directions are given for making a simple drop-wire carrier. Dropping wires in the twisting-in department is a lower-cost operation than dropping at the loom and saves loom down time.

Terry-towel borders can have infinite variety. T. Hargreaves. *Textile World 99*, 112-3, 210, 212 (June, 1949).

This is a description of the key weaves, the drafting of the pile and ground yarns, and the lifting plan for the heddles involved in weaving border designs on terry towels.

Twisted rayon yarns: applications. G. Roelofs. *Enka en Breda Rayon Rev. 2*, 107-09 (1948) ; *in Dutch.*

The use of twisted yarns in the weaving of rayon fabrics increases their value, improves their appearance and permits the production of special effects. Actual samples of 8 different rayon fabrics from twisted yarns are attached and discussed. (through *J. Textile Inst. 40*, A190 (May, 1949)).

Warp preparation machinery for synthetics. Geo. E. Archer & A. Schuler, Uster Corp. *Am. Wool Cotton Reptr. 63*, 31, 33 (July 14, 1949).

Weaving preparatory work is being done today by modern warp preparation machinery which operates in an almost human fashion. Some of the more highly developed machines used in this work are discussed, including the Turicum handing-in machine, the Zellweger reed drawing machine, the Uster dropper pinning machine, Gentsch leasing machine, and the Little Uster tying-in machines.

Weft detector. Saml. F. Siciliano (to Geo. C. Moore Co.). USP 2 470 527, May 17, 1949.

In a narrow fabric loom having a lay and a plurality of reeds and shuttles, weft feelers are positioned adjacent to each of the plurality of reeds and by engagement with weft threads extending from the shuttle to the fabric being woven. A loom stop motion is actuated by an electric circuit, and a contact engaged by the weft feeler closes the electric circuit when the weft feeler fails to be positioned by a weft thread as the lay beats up.

What do we mean by good weaving? Morland. *Silk & Rayon 23*, 806-08 (June, 1949).

This is a summary of the human and mechanical aspects of efficient weaving. Topics covered include maximum output per loom, accidental loom stoppages, warp breakages in weaving, looms per weaver, maximum P.M.H. and fabric defects.

Weaving plied yarn fabrics. Geo. Creasey. *Textile Age 13*, 20, 22, 24, 26, 30 (July, 1949).

Detailed suggestions for weaving plied yarn fabrics on the Crompton & Knowles S-6 and for avoiding imperfections due to faulty weaving are presented. Proper entering and twisting, checking during reeding and within the first yard of new warp, bobbin winding, and pointers in the operation of the loom are discussed.

Yarn guiding block for weaving shuttles. Seth Wood. USP 2 470 064, May 10, 1949.

A yarn guide block is placed in the shuttle between the end of the bobbin chamber and the tip of the shuttle. The block is a solid one-piece structure with a longitudinal yarn entrance slot extending from its top surface downward through the length of the block. A cylindrical yarn guiding tunnel of uniform diameter also extends longitudinally through part of the length of the block but is laterally spaced from the slot. A threading passage throughout the length of the tunnel extends from the slot beneath the tunnel and enters the tunnel on the opposite side of the center from the slot. A distinct bottom wall is left between the tunnel and passage for the length of the tunnel.

Knitting C 3

Attachment for hosiery machines. Julian B. Hardison (to David M. Harman). USP 2 474 246, June 28, 1949.

A mechanism is provided for preventing damage to the machine and its product by instantly stopping the machine in the event that the camshaft fails to shog after or during each revolution during the narrowing operation.

Automatic beam letoff. Geo. O. Young (to Vanity Fair Mills, Inc.). USP 2 470 125, May 17, 1949.

An automatic beam let-off for a knitting machine, which has a beam and a first motion shaft, comprises a power transmitting connection between the shaft and the beam. The connection includes an infinitely variable speed changing unit having an adjusting shaft. A pilot drum around which the thread from the beam passes is provided. An electro-magnetically operated means controlled by speed differentials between the first motion shaft and the pilot drum operates the adjusting shaft

to effect a constant linear speed to the thread leaving the beam.

Cabinet and gauge for Komet selectors. Ernest Bridges. *Textile Industries 113*, 146 (July, 1949).

Thirty-six different kinds of selectors control the patterns produced on the Komet Links and Links machine. A storage cabinet for these selectors and a selector gauge for sorting and properly storing the selectors are described and illustrated.

Care of stockings during manufacture. J. B. Lancashire. *Brit. Rayon & Silk J. 26*, 44-5 (Mar. 1949).

The handling of fine gauge stockings is discussed and suggestions are given for preventing damage during the various stages of manufacture.

Defective rayon knitwear: Types and elimination. M. H. van der Noordan. *Enka en Breda Rayon Rev. 2*, 114-16 (1948); *in Dutch.*

Some examples of faults in knitted rayon fabrics are illustrated and discussed. (through *J. Textile Inst. 40*, A201 (May, 1949)).

Feeding apparatus for yarn or the like. Rene Vin (to Societe Etablissements Poron). USP 2 471 362, May 24, 1949.

A feeding apparatus for yarn or the like for looms or knitting machines includes a rotatable cylinder, having at least one surface around which the yarn makes a number of coils, with means to drive the cylinder. A stationary supporting means is closely adjacent to at least part of the surface for the last coils of the yarn and surrounds partially the rotatable cylinder. A second rotatable device is driven at a lower tangential speed than the cylinder. The yarn fed by the cylinder is caused to make a small number of coils on the second rotatable device.

Flat warp knitting machine. Fritz Lambach. USP 2 451 498, Oct. 19, 1948.

A flat warp knitting machine comprises a needle bar carrying a series of needles with a needle bar drive for imparting periodic reciprocating movements to the needles in the direction of the longitudinal axis of the needles. A sinker bar is provided carrying a series of sinkers, arranged for knocking over knitted fabric over the needles, with a sinker bar drive for imparting periodic movement of the sinkers transversely of the longitudinal axis of the needles. The sinker bar is also reciprocal in the direction of the strokes of the needles. An actuating drive is also provided for moving the sinker bar and sinkers in the opposite direction to the stroke of the needles so that the length of the stroke of the needles may be reduced in accordance with the additional movement of the sinkers.

High speed production on modern machines indicates a bright future for warp knitted fabrics. J. B. Lancashire. *Textile Recorder 67*, 83-4 (June, 1949).

The spinning of wool-nylon twist and core yarns opens up the prospect of fine cloth being made on a warp-knitting principle much more quickly than is possible by the weaving process. The familiar locknit fabric is now being produced on bearded needle machines in widths up to 168 in. at a rate of 450-500 courses per min. Machines capable of knitting 1,000 courses per minute for other warp knit fabrics are also in use.

Manufacture of knitted ware. Textil-Forschungen A. G. Australian P. 132 459, July 5, 1949.

To manufacture knitted articles, true to shape, and with or without fancy effects and reinforcements, automatically and without the need for costly in-weaving operations the article is knitted in its longitudinal direction and given a proper shape by means of wedge-like loop courses.

Method of plasticizing knitted goods made from thermoplastic yarn. Albert E. Collidge, Edw. C. Dawes & Thos. A. Gilbert (to The Klinger Mfg. Co., Ltd.). USP 2 474 093, June 21, 1949.

A process for plasticizing, shaping, and finishing knitted articles made from thermoplastic yarns consists in passing the articles over and onto formers each of which provides a continuous black-body surface to underlie the article. The articles on their black-body formers are subjected to externally applied radiant heat.

New circular bearded needle knitting machine. Anon. *Textile Mfr. 75*, 273-74 (June, 1949).

A new knitting machine which is made in single and double-head models is described. Nine fabric constructions ranging from jersey to terry cloth can readily be made on it. The brackets carrying the sets of loop wheels (comprising a feeder) can be moved to accommodate different sizes of cylinders and in addition the gauge can be altered by changing the wheels and removing the needles to insert those of another gauge.

New uses for hosiery ribbers. Anon. *Am. Wool Cotton Reptr. 63*, 12, 29 (July 7, 1949).

Garters, sleeve holders, gauze bands, napkins, etc. can be profitably made on ribbers following a few

minor changes. For example, the only changes in the ribber pattern chain in knitting gauze bands would be to replace the link lug that controls the loose course cam with a plain link. The resultant fabrics are processed in open width or rope form, and the inspector severs the pieces from the chain.

New vinyl film prevents snagging. Anon. *Textile Industries 113*, 161 (July, 1949)

A new translucent clear vinyl film is fire resistant, has high tear strength, and is recommended for table coverings in hosiery mills to prevent snagging. The film can be fabricated on regular sewing equipment or by bonding with high frequency heating equipment.

Run-resist circular knit stockings. H. Wignall. *Textile Mfr. 75*, 266-67 (June, 1949).

The main difficulties in producing runproof circular knit stockings are maintaining sheer appearance and elasticity. Methods of producing the runproof effect such as (1) warp anti-run chains, (2) coil-loop stitch, (3) finishing processes, (4) double yarn ladder-band, (5) "fishnet" ladder-band and (6) knit float stitch are described and the merits of each considered in detail. It is pointed out that the tremendous progress made in finishing techniques seem to indicate that the chemists may forestall the engineer in solving the problem of stocking runs.

Setting apparatus for textile fabrics. Henry Richter (to Paramount Textile Machinery Co.). USP 2 470 265, May 17, 1949.

A setting apparatus for setting and shaping nylon knitted fabrics comprises a retort having an opening with a door for closing the opening and a form carriage movable with respect to the door into and out of the retort with resilient means for bringing the carriage to rest within the retort. Power actuated means perform the successive steps of moving the carriage into the retort, closing the door, introducing steam into the retort, shutting off and exhausting the steam from the retort, opening the door, and finally withdrawing the carriage from the retort. Automatic means control the sequence and time durations of the steps.

Thread letoff feeding mechanism. Geo. O. Young (to Vanity Fair Mills, Inc.). USP 2 470 124, May 17, 1949.

A thread let-off mechanism for knitting machines includes an endless driving belt passed over the thread on the beam with means for driving the belt at a fixed linear speed. Tension is maintained in the belt so that the thread leaves the beam at

the same constant linear speed as the belt. Means to by-pass the belt with the thread that is unrolled from beneath the belt are also provided.

Thread tension mechanism. Geo. O. Young (to Vanity Fair Mills, Inc.). USP 2 470 123, May 17, 1949.

A thread take-up device for keeping the thread between the warp beam and the thread guide of a warp knitting machine taut at all times is claimed. The device comprises a rotatable shaft with discs on the shaft and a plurality of rods mounted on the discs parallel to the shaft. The rods may be individually adjusted to greater or lesser distances from the shaft by means including radial grooves in the discs into which the ends of the rods set and cap screws passing through radial slots in the discs into the ends of the rods.

Trough solution distribution system. Anon. *Textile Industries 113*, 143, 145 (July, 1949).

A centrally located 500 gallon capacity reservoir for trough solution is elevated in the knitting room of a hosiery plant (Chas. H. Bacon Co.). The tank feeds connecting pipes which run to the troughs on each knitting machine. Each knitter has a gate valve control so that the troughs can be refilled as needed. This system saves time and labor, permits better housekeeping, reduces wear on machine parts, prevents soiled yarn and yarn boxes, and simplifies handling of trough solutions.

Warp braking device. C. Christiansen & G. O. K. Rusch. Australian P. 132 676, Feb. 17, 1947.

A warp braking device for circular looms comprises one or more drums or rollers over which the threads are passed and which are adapted to be stationary when the threads are pulled forward but may rotate under the action of the threads when they are running backward at the closing of lease. A ratchet mechanism provides for the stopping or release of the drums.

Warp knitted fabrics: patterning. M. H. van der Noordaa. *Enka en Breda Rayon Rev. 2*, 166-83 (1948); *in Dutch.*

A richly illustrated description is given of the possibilities of pattern production on the warp knitting machine for continuous rayon filament and rayon staple yarns, including designs obtained by the following effects: stitch effects, methods of interlacing, luster effects, colored effects, patterns obtained by using high-twist and fancy yarns or different raw materials, etc. (through *J. Textile Inst. 40*, A190 (May, 1949).

Warp knitting machine. Fritz Lambach. USP 2

451 499, Oct. 19, 1948.

A warp knitting machine comprises a rotatable driving shaft, a rotatable warp beam, and movable warp guides. A warp guide driving means is actuated by the driving shaft for imparting periodic reciprocating movements to the warp guides so as to feed warp yarn drawn from the warp beam to the needles of the machine. A tensioning means for the warp yarns is provided with a movable tension regulating bar and a tension regulating bar drive. The drive imparts periodic reciprocating movements to the tension regulating bar whereby tension modifying actions of the reciprocating warp guides on the tensioned warp yarns are substantially compensated.

Width-changing means in a knitting machine. J. H. Straussberger. *Australian* P. 132 799, Nov. 6, 1945.

The narrowing and widening of a knitted fabric is accomplished on a flat knitting machine in a single course to any extent, up to substantially ½ of the previous width in narrowing, or double in widening, by means of the transfer points operable through the screw and rack mechanism from a shaft. In changing the width of a fabric between 2 successive knitting operations the loops are delivered by the points from one needle to another a plurality of times in the same direction. A method of changing the width of a knitted fabric in a single course by delivering loops laterally from one needle to another a plurality of times in the same direction is also claimed.

Wrap stripe attachment for knitting machines. Cornelius S. Grove, Jr., Julius Van McKinney & Silas Pittman (to H. Hosiery Co., Inc.). USP 2 451 673, Oct. 19, 1948.

A wrap stripe attachment is claimed for circular knitting machines, having a bed plate, a pattern drum, a latch ring, a throat gap, and a circular series of needles. Means are provided for feeding wrap strands across the needle circle and for selectively raising some of the needles to take the wrap strands. A semi-circular clamp and cutter plate and an arcuate horn along which the wrap strands move are disposed within the needle circle. Means are provided for securing one end of the horn to the latch ring. One end of the plate has a finger projecting above the free end of the horn, and the other end of the plate projects below the base of the horn.

Special fabrics C 4

Decorated pile fabrics. Behr-Manning Corp. Australian P. 132 928, Sept. 24, 1946.

A substantially uniform layer of pile-forming fibers, oriented in parallel relationship, is deposited upon an adhesive backing and, while the adhesive is soft, certain of the pile fibers are displaced in predetermined areas or along predetermined lines, to produce a desired pattern, then the adhesive is set. Jets of air are used to displace the fibers and these may be spaced at intervals along a pipe over which an inverted strip of the pile fabric passes thus forming straight or wavy parallel grooves or spots, or a V-shaped pipe, provided with slots, may be used to displace all the fibers and form a "parting" which may be filled with oriental fibers of a different length or color.

Method of weaving textile containers. Alfred Wallwork (to Carlyle Sales Corp.). USP 2 471 380, May 24, 1949.

A method of making textile containers, such as bags, pockets, and sacks of seamless construction, comprises weaving fabric areas having varying widths of double thickness and joining the areas by a portion of single thickness along each longitudinal and transverse edge of the areas. An indicating line is formed by omitting warp threads in the desired longitudinal portions of a single thickness, and the fabric is severed longitudinally along the indicating line. A pinked edge is cut in the fabric transversely along a line parallel to the transverse portion of single thickness to provide an open upper end and a lower end having a portion of single thickness.

Reeves develops new plastic fabric. Anon. *Textile Age 13*, 106 (July, 1949).

Reevon, a plastic fabric made from woven monofilaments of Bakelite polyethylene, is claimed to be suited for seat covers for automobiles, buses, hotels, etc. Some of the advantages of this fabric are that it is odorless, is pliable in extreme cold, water resistant, may be cleaned with soap and a damp cloth, etc.

Shock absorber webbing. Edw. A. Neff. USP 2 471 166, May 24, 1949.

A shock absorber webbing for use in parachutes comprises a first series of warp threads, adapted to break under applied force, with individual threads of the first series of warp threads transversely spaced from each other. Groups of weft threads are provided at longitudinally spaced intervals with individual threads of the groups interwoven to form a matrix. A second series of warp threads having greater free elongated length than the first series are held within the matrix.

Groups of threads of the second series are interwoven with groups of weft threads and form loops adjacent to the spaced intervals to give increased length.

Smallwares: No. 11-14. A. Thompson & Sigfrid Bick. *Brit. Rayon & Silk J. 26,* 52-3, 63 (Mar. 1949); 65, 67, 70 (Apr. 1949); 60, 62 (May, 1949); 63, 65 (June, 1949).

The following subjects are discussed in some detail: No. 11—Passamenterie or ladder tapes; 12—structure of pearl and other fancy edges; 13—multi-shuttle looms; and 14—Jacquard multitier looms.

Survey of non-woven cotton fabric development. Frank A. McCord, Natl. Cotton Council. *Textile Age 13,* 62, 64-6, 68, 70 (July, 1949).

Nonwoven fabrics are being used in wearing apparel, such as aprons, bibs, diapers, etc.; household articles, such as bed pads, card table covers, dish cloths, etc.; and industrial products, such as acoustical curtains, wallpaper, quilting, etc. Cards or garnetts are being used to convert fibers into the web structures for nonwoven fabrics, and a new machine is in the development stage for laying fibers parallel and at right angles to obtain equal strength in both directions. Nonwoven fabrics are conceded to be superior in quality to paper but cannot compare in quality with woven or knit goods. Three methods of bonding the fibers together are (1) impregnating the web with an adhesive material; (2) blending thermoplastic and cellulosic fibers and softening the thermoplastic fibers to act as a binder, and (3) striping the web with an adhesive.

Inspection and testing C 5

New turning and inspection form speeds inspection and reduces picks. Anon. *Textile Industries 113,* 156 (July, 1949).

A brief illustrated description is given of a new turning and inspection form for fine-denier hosiery. The form is reported to prevent many picks and pulls when the hose is turned during inspection.

Regaining quality requires definite plan. E. M. Findley, Jr. *Textile World 99,* 103-5 (May, 1949).

Quality losses are often underestimated by as much as two-thirds due to tendency of management to consider only those losses due to sales of seconds and allowances given as quality losses. Cost of cloth room operation, losses in waste, etc.

should also be considered. A 5-point plan for quality control is presented and discussed briefly.

Fabric applications C 6

Fabric lubricating material. O. & S. Bearing Co. Australian P. 132 170, Mar. 15, 1946.

Fabric material for lubricating bearings and joints, includes a lubricating oil containing a fatty acid.

Method of and apparatus for inserting draw cords in bags. Arthur C. Ewer & Robt. W. Hanse (to Bemis Bros. Bag Co.). USP 2 477 053, July 26, 1949.

A method of inserting a draw cord in a prefabricated bag, comprises the steps of gathering a portion of the bag material adjacent the mouth of the bag to form a first set of pleats, gathering another portion of the bag material adjacent the mouth of the bag to form a second set of pleats, thrusting a needle having an eye adjacent its point and threaded with a cord through the first set of pleats, thrusting a second needle having an eye adjacent its point through the second set of pleats, then threading the end of the cord extending from the eye of the first needle in the eye of the second needle, withdrawing both needles from the pleats to pull the cord through the pleats, and securing together the ends of the cord.

Properties and uses of nylon fabrics. F. Millard. *J. Textile Inst. 40,* P379-87 (Apr. 1949).

In a lecture, the properties and uses of knitted and woven fabrics made from continuous filament nylon yarn are reviewed.

Rayon book cloths: properties. B. J. Aalbers. *Enka en Breda Rayon Rev. 2,* 124-25 (1948); *in Dutch.*

Ten requirements which a rayon fabric must fulfill for satisfactory application as a book-binding material are discussed. (through *J. Textile Inst. 40,* A201 (May, 1949)).

STANDARD FINISHING D

Bleaching goods for dyeing and finishing in the continuous open-width peroxide system. J. L. Moore, E. I. du Pont de Nemours & Co., Inc. *Am. Dyestuff Reptr. 38,* 497-9, 504 (June 27, 1949).

The open-width J-Box continuous bleaching process is described and its advantages are noted.

Compartment washer. Anon. *Textile Age 13,* 78 (July, 1949).

Features of a new compartment washer are noted. It can be used in range operation with other finishing machinery, or it can be operated independently in washing, processing, or dyeing.

Control of metallic salts cuts cost of finishing. T. N. Patrick. *Textile World 99*, 133, 198, 200, 202, 204, 206, 208 (May, 1949).

Metallic residues of certain types give trouble in textile processing by forming insoluble soaps which act as resists in dyeing, cause bad odors when goods are stored for some time, and cause development of stains and discolorations in finished goods. These insoluble soaps are due mainly to water impurities, but may be caused by residues of mordants, dyes, etc. rinsed from colored goods. Difficulties caused by metallic salts in bleaching and scouring, rayon processing, cellulose acetate dyeing, and wool scouring are discussed and suggestions are given for preventing their occurrence.

Electric control apparatus in fabric drying machine having means for conveying the fabric. Kenneth S. Laurie (to John Dalglish). USP 2 466 446, Apr. 5, 1949.

A fabric drying machine includes means for conveying the fabric through the machine at variable speed; means for passing an electric control current through a portion of the fabric; and apparatus that comprises a control circuit making electric contact with the fabric and a controller for the speed of the driving means of the conveyor with a motor which will start in one or other direction according to the strength of the electric current produced in the circuit. The strength is determined by the moisture content of the fabric. The motor acts in the speeding-up direction when the moisture content is low and in the slowing-down direction when the moisture content is high.

Evaluation of desizing aids preparation for dyeing. K. Willem Keller. *Textile World 99*, 125 (June, 1949).

Residual starch left in goods causes uneven effects in dyeing. Iodine stains starch blue or violet. A scale can be made using a standardized iodine solution applied to goods containing known amounts of starch; cloth to be tested can be treated with iodine and compared to this scale and the amount of starch in the cloth can be determined.

Factors influencing the raising of wool fabrics. C. S.Whewell & J. B. Crawford. *J. Textile Inst. (Trans.) 40*, T341 (May, 1949).

In a brief communication experiments are reported that show that the presence of anti-lubricant retards raising.

Finishing cellulosic fabrics. Jos. Bancroft & Sons Co. Australian P. 132 963, Apr. 29, 1946.

Durable mechanical finishes are imparted to cellulose fibers and fabrics by including in addition to the mechanical treatment, the steps of sizing the material by impregnating coating or printing with a solution containing a polysaccharide carbohydrate, an aldehyde and preferably a catalyst, which are reacted in situ on the fabric, and curing the sized material by heat simultaneously with, or subsequent to, friction glazing, calendering, beetling, schreinering, or embossing.

Fundamentals of the crabbing process. Anon. *Can. Textile J. 66*, 44-5 (June 10, 1949).

The 2 most important factors controlling setting in crabbing are the temperature and the pH of the medium. Permanent set is built up by means of 2 successive reactions—(1) Disulfide bond breakdown; (2) the formation of new linkages. At low pH values reaction (1) takes place very slowly and permanent set is not realized; when the pH is too high damage to the wool keratin occurs, partly because reaction (2) does not take place. The pH range which can be used in practice lies between 6.0 and 9.5. High pressure steam is more effective than steam at atmospheric pressure or boiling water in effecting set.

Further contributions to the question of infrared heating. H. Busath. *Kunst. u. Zell. 27*, 62-6 (Feb. 1949).

This is a discussion on the general applications of infrared heating and, more specificially, its application in the textile industry. Several textile installations are described.

Laundering with synthetic blues. Lever Bros. & Unilever Ltd. Australian P. 132 900, Mar. 26, 1946.

White textile materials are washed in an aqueous bath containing a detergent and a very small proportion (e.g., less than 0.5%) of a blue fluorescent compound derived from a di-amino benzoyl amino-stilbene sulfonic acid by substituting an organic radical, which would not render the compound light or oxygen unstable and which does not contain a primary aromatic amine group, in each of the terminal $-NH_2$ radicals. The product of the above process, and a detergent containing the above compound are also claimed.

Method and apparatus for drying web material. Arthur G. Gautreau (to Andrews & Goodrich, Inc.). USP 2 462 380, Feb. 22, 1949.

Apparatus for drying cloth or other web material is equipped with an elongated drying space, broken up into sections in zigzag formation one above another. The cloth is conveyed through the drying space by a traveling apron also arranged in zigzag formation. The roof and floor of the drying space are provided with nozzles through which heated air is directed against the cloth during its traveling movement. The cloth rests on the carrier while traveling through the top section of the drying space and is held against the underside of the carrier in the second section by unbalanced air pressure, etc. Means are also provided to float the cloth free from the carrier during its movement from one drying space section to the next so that the cloth will enter each drying space section in a slack condition regardless of any shrinkage that may have occurred to the cloth.

New mist-spray dampener. Anon. *Textile Industries 113*, 187, 189 (Aug. 1949).

Features of the new mist-spray dampener, that is reported to give efficient and even dampening of all types of fabrics, are described. Completely enclosed, adjustable spray nozzles, which eliminate air currents, evenly distribute the moisture over the cloth. One machine is said to ordinarily keep 3 calenders working.

Progress in bleaching practice. R. G. Fargher, Shirley Institute. *J. Soc Dyers Colourists 65*, 276-78 (June, 1949).

A comparison is made between methods of bleaching carried out in Britain and in the U.S.A. The technical advances in bleaching in this country as exemplified by the use of cuprammonium fluidity measurements to promote established bleaching practices is emphasized. The use of the American continuous bleaching operations is discussed in detail.

Sensitive cloth guiding device for high speed pin stenter. Anon. *Brit. Rayon & Silk J. 26*, 74 (June, 1949).

This is a detailed description of a device used to regulate the guiding head of the pin stentering machine in such a manner that the chains register accurately with the cloth selvedges. This is accomplished by a vertical feeler against the selvedge that will close one of 2 circuits if pushed outwards or allowed to swing inwards.

Sequestering agents: their use in textile processing. H. W. Zussman, Alrose Chemical Co. *Am. Dyestuff Reptr. 38*, 500-4 (July 27, 1949).

The properties and uses of sequestering agents in textiles are described and discussed. Sequestering agents, which are water-soluble ion exchangers, have the ability to deionize or deactivate heavy metal and alkali earth ions without actually removing them from solution. The use of these agents in counteracting the effects of trace metals in oxidations, detergency and dyeing are discussed. There are 37 references.

73% caustic soda saves plant money. C. Norris Rabold. *Textile World 99*, 121, 123 (Apr. 1949).

Net savings of several cents per hundred pounds of caustic may be realized by buying 73% caustic soda instead of 50% strength. The savings are realized in the transportation costs. Numerous problems are involved in handling the higher strength caustic and suggestions for solving them are given. A diagrammatic sketch showing an installation for unloading and storing the 73% caustic is also given.

Synthetic detergents have broad application. O. M. Morgan, Allied Chem. & Dye. Corp. *Textile World 99*, 129, 268, 270, 272, 274 (Apr. 1949).

The properties of synthetic detergents and their uses in textile processing are reviewed.

Tenter clip. Maurice G. Hinnekens. USP 2 472 375, June 7, 1949.

A tenter clip having spaced parallel pivoting studs to connect it pivotally to 2 other tenter clips between which it is disposed in the forming of a tenter-clip chain for a tentering machine is claimed. The clip has a thrust-assuming face lateral of and facing away from that plane which is coincident with both axes of the studs. An attachment is removably secured to the clip in sheathing relation to the face and has a deflected portion penetrated by and snugly fitting one stud. Another portion of the attachment is hooked around and anchored to the portion of the clip which surrounds the axis of the other stud.

Use of automatic controllers in textile drying. Leonard Walter. *Textile Mfr. 75*, 282-84 (June, 1949).

This is a review of some of the factors relating to the control of temperature in textile drying. Aspects of drying discussed include, methods and instruments for control, fundamentals of the heat-flow process, steam consumption, air re-circulation, effect of humidity and finally heat losses.

Use of soap in milling. D. R. H. Williams. *Textile Mfr. 75,* 289-91 (June, 1949).

Although water milling produces quicker results, a better and more even cover and nicer handle and appearance, it is not recommended because soap is needed as a lubricant to counteract friction and reduce excessive flocking. A revised system involving lathering-up with the trough closed for milling is proposed which retains the advantages of both the water and soap milling systems without their disadvantages.

Washing systems greatly improved. D. Stewart Quern, Becco Sales Corp. *Textile World 99,* 108-10, 204 (June, 1949).

A brief description is given of the different types of continuous-bleaching ranges now being used. The need for more efficient washing required by use of bleaching ranges is noted. Several types of washers are described and discussed.

Whitening textiles. Lever Bros. & Unilever Ltd. Australian P. 132 263, Mar. 26, 1946.

White textiles are improved by incorporating in the material a small proportion of a blue fluorescent compound which is a derivative of a diamino benzoyl aminostilbene sulfonic acid formed by the substitution of one of the hydrogen atoms in each of the NH_2 radicals attached to the terminal benzene rings by an organic radical which does not contain an NH_2 radical directly attached to an aromatic nucleus and which would not itself render the compound formed unstable to light and oxygen.

DYEING AND PRINTING E

Application of vat dyes by jig and pad jig methods. Frederick A. Alter. *Textile Age 13,* 40, 42-3 (July, 1949).

The jig method of dyeing is used where medium and heavy shades or a diversified number of shades is required, in the not-too-large quantity production plant, and where quicker and simpler handling is essential. The pad jig method is used for light and medium shades and for somewhat higher quantity production. Both are used for dyeing curtains, dresses, upholstery, shirting, etc. Application of vat dyes by the 2 methods is described.

Dyehouse economics. Irving Teplitz. *Textile Age 13,* 7, 10, 14, 16 (July, 1949).

The major cost factors that go into the dyeing and finishing of fabrics are given in a survey of dyehouse economics. Subjects discussed include the cost of steam, economical production, computations, water costs, cost of transportation, bulk purchases, and checking goods.

Dyeing degraded wool. I-III. H. Crook, Imperial Chem. Industries. *Textielwezen 4,* 19-21 (Dec. 1948); *5,* 35-7 (Jan. 1949); 35-6 (Feb. 1949).

I—Methods of dyeing for wools which have been exposed to the weather, subjected to shrink-proofing treatments, degraded during carbonization, or worn and faded clothing are discussed. A number of dyes are listed and their applications given. II—The treatment of tippy wools and carbonized wools is discussed, methods are recommended and a list of dyes to be used is given. III—Dyeing of worn and faded clothes is taken up in detail and a list of monosulfonated dyes is given which dye wool in a neutral bath as strongly as cotton. A second list of tetrasulfonated dyes is given which are effective in dyeing half-wool fabric because they have a resist effect for the wool. It is concluded that the facts reported in this series of papers support the theory that the mechanism of the reaction of wool with the dye depends principally on the nature of and the number of the acid groups in the molecule of the dye.

Dyeing polyacrylonitrile. E. I. du Pont de Nemours & Co. Australian P. 132 307, June 6, 1946.

Articles of acrylonitrile polymer, e.g., filaments, are treated with a naphthol first component, then with an aqueous acid solution and finally with a coupling component for the first component.

Elements of color and spectrophotometry. Edw. W. Rhael, Sandoz Chemical Works, Inc. *Am. Dyestuff Reptr. 38,* 490-5 (June 27, 1949).

This is a synopsis of a paper presented before the New York Section, AATCC. The first part is a discussion of the physical theory of color; the second part is a description of the construction and operation of the spectrophotometer and a discussion of some of the properties and characteristics of spectrophotometric curves.

Fixation of pigments on textile materials. Henry C. Olpin & Sydney A. Gibson (to Celanese Corp. of Am.). USP 2 474 909, July 5, 1949.

A process for fixing pigments on artificial textile material comprises applying to the material an aqueous paste, comprising the pigment, an organic acid of low volatility and a water-soluble condensation product of formaldehyde and a substitution product of biguanide obtainable by heating dicyandiamide with ethylene diamine dihydrochloride to 150-200°C and then heating the

material to a temperature of 80-100°C.

Hypochlorite oxidation of cotton cellulose in presence of mixtures of certain vat dyes—Part I. G. M. Nabar & J. A. Rathod, Univ. of Bombay. *J. Sci. Ind. Research (India) 8*, 81-6 (May, 1949).

In this study of the oxidation of cellulose dyed with Ciba Blue 2B, Cibanone Orange R and their mixture both in the reduced and unreduced state by dilute solutions of sodium hypochlorite, it was found that in the reduced state Ciba Blue 2B does not accelerate the oxidation of the cellulose substrate. Cibanone R, however, under similar conditions causes a considerable acceleration of the oxidation of cellulose. In the presence of reduced Ciba Blue 2B, reduced Cibanone Orange R loses its identity with the result that there is no acceleration of the oxidation of cellulose by hypochlorite solutions.

Method of dyeing with metallized dyes. Henry E. Millson & Shannon Mooradian (to Am. Cyanamid Co.). USP 2 470 080, May 10, 1949.

A method of dyeing wool with metallized dyes soluble in acid baths comprises subjecting the material to a dyebath containing a chromium complex of a metallizable azo dye; an amount, sufficient to be effective but insufficient to cause scum formation and extensive precipitation in the bath, of a water soluble condensation product of about 31 mols of ethylene oxide with a lower alkylolamide of a thermally dimerized drying oil acid; and an amount of acid below that giving level dyeing with the same dye in the absence of the condensation product. The alkylol groups of the alkylolamide are hydroxyethyl.

New dye jig covers. Anon. *Textile Age 13*, 76-7 (July, 1949).

A new type cover for dye jigs has 2 curved cover sections which move on circular tracks at the ends of the enclosure so that opening and closing the enclosure sections is accomplished very simply.

Nylochromate for nylon stock dyeing. Anon. *Am. Wool Cotton Reptr. 63*, 75 (July 14, 1949).

A new dye, Nylochromate, which is primarily adapted to dyeing by the chromate process, is reported to have outstanding resistance to light and fulling. The dye is for use in dyeing nylon stock.

Photographic textiles give new look. M. Lawrence & J. Gallagher. *Textile Mfr. 75*, 298 (June, 1949).

A new method of reproducing photographs on textiles has been developed in Australia. The method, which is called "Phototex", is a combination of the processes of newspaper blockmaking and silk screen printing.

Procedure for printing shirting in Ireland. I. *Textile Industries 113*, 76-9, 91 (Aug. 1949).

In a discussion of printing quality shirting, desizing and drying before printing are discussed. Thickenings, reducing agents, alkali, hygroscopic agents, and printing pastes used in printing are also reviewed. Information on engraving, printing foundations, speed of production, printing failures, and damage of rollers in printing is included.

Raising of dyed fabrics. C. B. Stevens, C. S. Whewell & H. T. Yeganaga, Leeds University. *J. Soc. Dyers Colourists 65*, 280-84 (June, 1949).

The effect of wet and dry raising (napping) of woven wool fabrics dyed and undyed is discussed. The results indicate that in general cloth dyed with Neolan dyes is napped more readily than the undyed cloth but when dyed with acid milling dyes, neutral-dyeing acid dyes, direct cotton dyes, mordant dyes, or indigo, the susceptibility of the cloth to napping is reduced. Napping is not appreciably affected by the application of equalizing acid dyes. pH has a marked influence on the napping of fabrics dyed with all classes of dyes except indigo. Lower pH values are associated with ease of napping. The change following dyeing is most marked when the cloth is raised (napped) wet.

Report of Committee for Nomenclature and Classification [AATCC]. Carl Z. Draves, Chairman. *Am. Dyestuff Reptr. 38*, 489 (June 27, 1949).

The official nomenclature for fastness of dyeings and other ratings, as adopted by the AATCC, are given.

Screen printing. T. V. Punnose. *Indian Textile J. 59*, 627-30 (Apr. 1949).

Two methods of making screen prints are described. One is a knife cut process and the other a photographic method. Both methods are described in sufficient detail to permit duplication of either method of screen printing.

Some factors affecting the dyeing of viscose rayon. III—The volume swelling. J. M. Preston, S. H. Mhatre & K. I. Narasimhan. *J. Soc. Dyers Colourists 65*, 17-20 (Jan. 1949).

Viscose rayon fibers were spun with a range of volume swelling values from 60 to 150%, and their dyeing properties investigated. The dyeing

was done with Sky Blue FF, and the results are correlated with the calculated values derived from Marshall and Peters' equations.

Some observation on the levelling properties of acid dyes. I—Level-dyeing acid dyes. II—Prechromed dyes. D. R. Lemin & I. D. Rattee. *J. Soc. Dyers Colourists 65*, 217-25 (May, 1949).

Part I—A study was made of the effect of pH on the exhaustion of a number of acid dyes and of dye remaining in the dye bath after dyeing on the rate of levelling; a hyperbolic relationship was found to exist between the time of half-dyeing and the concentration of dye anions in the bath. Part II—The exhaustion of 3 selected prechromed dyes at different dyebath pH values was measured.

Stripping of dyes from acetate silk, mixed fibers and rags. Rudolf Monch. *Textil-Praxis 3*. 54-5 (Feb. 1948); *in German*.

The choice of a method for stripping of dyes and clearing of fibers always depends on the dyeing process. Unless the character of the latter has been established it is necessary to determine which method will produce the desired result most simply and rapidly. Preliminary tests with small samples of materials should be conducted for the purpose of selection of appropriate methods. Only in this manner can accidents be prevented, labor and chemicals economized, and material conserved.

Textile adhering machine for silk screen printing. Anon. *Textile Industries 113*, 189, 191 (Aug. 1949).

A machine for adhering fabrics to screen printing tables moves down the table, unrolls and adheres the fabric as it passes along. The adhesive, Thermo Glue, is used where heat application is desired, and Aqua Glue is used where cold application is preferred.

SPECIAL FINISHING F

Application of chemistry to textile finishing processes. E. Wilson. *Textile Mfr. 75*, 295 (June, 1949).

A system for the classification of chemical finishing treatments is proposed, as follows: (1) Processes for adornment or enhancement of appearance e.g., delustering, crease resistance; (2) processes for protection or proofing. This includes such processes as shower-proofing, flameproofing, mothproofing; (3) processes giving serviceability or durability. These would include treatments for dimensional stability, improvement in storageability, fiber slippage and wear.

Anti-shrinkage treatment of wool. Wolsey Ltd. Australian P. 132 269, May 16, 1946.

Materials consisting wholly or partly of wool are subjected in a dry or nearly dry state to the action of gaseous fluorine, or fluorine mixed with an inert gas, which flows through a chamber containing the materials, in order to reduce the tendency of the materials to shrink. The fluorine may be obtained by heating in the chamber, a substance which will liberate the gas. The materials may be subsequently treated with a softening agent to improve the handle.

Anti-shrinking treatment of wool. R. Bloch, K. Goldschmidt, P. Goldschmidt & I Schnerb (to Palestine Potash Ltd.). Australian P. 132 655, July 15, 1946.

Wool is treated with an aqueous liquor containing a water-soluble bromate and hypochloric acid, the concentration of hypochloric acid conforming to the formula $c = 1.25\ a\ k$, where—

a=grams of bromine per litre and is not less than 0.7.

c=grams of acid per litre.

k=a constant depending on the temperature of the liquor during treatment and has values about 3.5 at 11°-12°C., 2 at 25°C and 1 at 35°C.

A wetting agent and a protective colloid may be included and the treatment may be combined with milling and fulling processes.

Chemical technology of wool. VII—The unshrinkable finish. J. L. Stoves. *Fibres 10*, 81-3 (Mar. 1949).

The use of synthetic resins, chlorine, sulfuryl chloride and fluorine in anti-shrink treatments for wool is discussed. For Parts I-VI see TTD: *6*, 96.

Description of S. W. process for wool shrinkage control. Jack Epelberg, Cluett Peabody Co., Inc. *Textile Industries 113*, 131, 133 (July 1949).

An abstract of a paper on wool shrinkage control is presented with information given on the S. W. process and factors in the evaluation of the various processes and in selecting the process. The S. W. process combines the oxidizing action of permanganate with the halogen while retaining all the attractive properties of the wool and gives the wool an improved appearance, hand, and loftiness. The process can be carried out in almost any type of machine and at every stage of manufacture of wool.

End to the moth menace? Anon. *Textile J. of Australia 23,* 550 (Sept. 20, 1948).

Scientists in Britain believe they have found a complete answer to the moth menace. It is a new process, which is "built into" the fiber itself, and lasts as long as the fabric. It is also claimed that the process makes wool less likely to be damaged in washing, and that the latest researches have found a way of incorporating it cheaply in most wool or worsted fabrics. The process is now being examined.

Imparting permanent water-repellent properties to textile materials. Imperial Chemical Industries of Aust. and N. Z. Ltd Australian P. 132 197, Dec. 12, 1946.

Textile materials are impregnated with an aqueous solution or suspension of a high molecular weight quaternary ammonium salt (e.g., stearamidomethylpyridinium chloride), which contains a thermally decomposable quaternary group, and 5% or less by weight of an alcohol or a phenol, containing more than 6 C atoms, so that the solution or suspension will remain sufficiently mobile for textile impregnation at temperatures between 25°C and 40°C. The preferred adjuvant is 2-ethylhexanol or p(tertiarybutyl) phenol; compounds conferring crease-resisting properties may also be added to the impregnating bath.

Melamine derivatives: textile applications. A. Landolt. *Textil-Rundschau 3,* 108-14 (Apr. 1948); *in German.*

In a manner analogous to the formation of dimethylolurea, melamine and neutral aqueous HCHO solutions give water-soluble methylol compounds; hydrophobic condensation products are obtained by boiling the solutions, particularly a hydrophobic derivative of trimethylolthriaminotriazine, which is called Product H. Product H was compared with dimethylolureas on untreated cellulosic yarns in order to determine its suitability for improving the mechanical and dyeing properties of fibers. Numerous illustrations are given.

Modern dyehouse procedure for processing nylon stockings. J. H. Burbidge. *Brit. Rayon & Silk J. 26,* 60-2 (June, 1949).

Included in this article are descriptions of preboarding, scouring and dyeing, and finishing treatments for snag-resistance as done for nylon stockings in the British Isles. Data on steam temperatures, dye bath temperatures, and dyes used are included.

New development in moire finishing. Hans A. Holterhoff, Newburgh Moire Co. *Can. Textile J. 66,* 48-52, 62-4 (June 10, 1949).

See TTD: *6,* 646.

Plastics for textiles. E. B. Higgins. *J. Textile Inst. (Proc.) 40,* P475-82 (June, 1949).

The more important applications of synthetic resins of interest to manufacturers and processors of textile materials are discussed. The 2 types of resins, the thermosetting and thermoplastic, are described from a chemical and physical standpoint. Examples of generally used resins in each of these groups are given. The use of such specific resins as polyvinyl alcohol for sizing purposes and the melamine formaldehydes and polyvinyl acetates for certain finishing operations to achieve desired effects is also mentioned.

Rendering materials water-repellent. International Gen. Electric Co., Inc. Australian P. 131 927, June 27, 1945.

Material which is normally non-water repellent is treated with an organo silicon amine or amines. The amines may be obtained by reacting an organo silicon halide with anhydrous ammonia in an amount sufficient to replace all or at least ½ of the halogen atoms in the organo silicon halide.

Rubber-textile bonding. Callender's Cable and Construction Co., Ltd. & Callender-Suchy Developments Ltd. Australian P. 132 630, Mar. 15, 1945.

Textile fabric is bonded to rubber by depositing on the fabric a bonding metal consisting of an alloy of copper and zinc, applying the metallized fabric to unvulcanized rubber base material, and subjecting the united materials to a normal vulcanization process. Metallization of the fabric preferably is effected by electrodeposition after it has been rendered conductive.

Sampling in textile printing. J. H. Downey. *Textile Age 13,* 52-3, 56, 58-60 (July, 1949).

Three main methods of color sampling are used including: sample fents of colors only, from laboratory trials; and sample fents from printed patterns, immediately prior to printing. Factors which will combine to give faulty results and points to be avoided in sample printing, drying, steaming, mordant dye fixation, developing and washing are discussed.

Special finishes expand spun rayon markets. Chas. Blount, Jr., United Piece Dye Works. *Am. Wool Cotton Reptr. 63,* 25, 94-5 (July 14, 1949).

The application of special finishes to spun rayon has given these fabics their invaluable place in

the textile markets. Examples of these finishes are the Unidure process that makes spun rayons wrinkle-resistant; Durasec, a durable water-repellent; Unisec, a permanent wrinkle-resistant finish and durable water-repellent; the Airfast process that guarantees spun acetates against gas fading, etc.

Synthetic resin finishes with special reference to resinous emulsions. P. Wengraf. *Textil-Rundschau 3,* 1-9, 42-7, 79-83 (Jan., Feb., Mar., 1948); *in German.*

There is a marked tendency toward the increasing employment of acryl and vinyl resins (especially in emulsions) for finishing purposes, which outstrips the use of other resins. Conversely among resins capable of being hardened the triazin (particularly the melamine) condensates have assumed an important position alongside the urea resins which were originally used alone. These 2 classes of condensates have been modified to an increasing extent, that is to say, combined with long chain compounds (usually higher fat acids or fat alcohols), in order to obtain a water-repellent effect and to render the latter permanent. Thus far alkyd resins have been employed in textile technology only in mixtures with other condensates. Synthetic resins offer ever new opportunities for finishing techniques. Modification of different resin finishes renders it possible to control the effect of finishing in any desired degree. In the finishing industry the tendency of an augmented requirement of fastness with respect to washing stability and natural hand has manifested itself, just as high grade dyestuffs have been introduced successfully in dyeing and printing. It is not beyond the realm of probability that the next generations will witness the complete repudiation of old starch, dextrin, or rubber finishes with their concomitant nostrums.

Textile materials: treatment with methyl silicon amine to give improved resistance to moisture penetration. R. J. Meakins. *J. Council Sci. Ind. Res. (Australia) 21,* 222 (1948).

Cotton and woolen fabrics treated with a solution of methyl silicon amine in benzene showed greatly improved resistance to wetting. (through *J. Textile Inst. 40,* A194 (May, 1949)).

TESTING AND MEASUREMENT G

Core test as a wool shrinkage indicator. A. Johnston. *Natl. Wool Grower 39,* 18 (1949).

Samples of 31 lots from 21 clips were core tested in 1948. The results show the variations in shrinkage, and therefore in value, between various clips in any year from year to year, and also variation in individual clips and in areas of production. Both wool growers and the wool trade are finding the core test a reliable indicator of accurate grease values. (through *J. Textile Inst. 40,* A200 (May, 1949).

Estimation of fatty matters in wool. E. W. Clark & W. L. Thomas. Laboratory Wool Combers Ltd. *J. Textile Inst. (Trans.) 40,* T356-70 (June, 1949).

An account is given of an investigation into the natures and methods of estimation of fatty matters normally present on wool during its processing, the errors and sources of interference therein, and the conclusions reached in the light of the results. A series of experiments is described in which a number of solvents such as diethyl ether, petroleum ether, acetone, dichloroethylene and chloroform were investigated for their ability to remove 3 general classes of fats normally encountered on wool: 1. Residual fats derived from wool grease, 2. Added lubricating oils, and 3. Soapy residues. It was found that diethyl ether was the most generally satisfactory solvent for the initial extraction of fatty matter and that a solvent extraction method is more satisfactory than the British Commercial Scour test which employs a potash-olive soap and sodium carbonate.

Froth flotation of fibers. J. M .Preston & S. Saba, Manchester Univ. *J. Textile Inst. (Trans.) 40,* T381-88 (June, 1949).

The flotability of fibers, using a froth method, at various pH values, with the addition of several surface active materials, and when pretreated in several different ways was investigated. Flotation experiments were carried out on wool, Vinyon, cellulose acetate, viscose rayon, casein and silk at pH values of 2, 4, 6, 8, and 10 using various wetting agents depending on the fibers which were to be separated. These experiments showed that the froth flotation method of separating differing fibers is a suitable one, if the correct conditions of pH are maintained and proper wetting agents are used.

Investigation of methods of testing for moisture in wool. Geo. C. LeCompte & Henry H. Lipp, USDA. *Am. Dyestuff Reptr. 38,* 484, 512 (June 27, 1949).

Of 5 methods of testing for moisture in wool examined, toluene distillation appeared to be the most accurate. Drying of wool with hot air in conditioning ovens or forced draft ovens gives

incomplete results These methods might yield accurate results if means were developed for a continuous supply of anhydrous atmosphere.

Measurement of modulus and damping capacity in torsion and in bending for wool and other textile fibers. J. P. A. Lochner. *J. Textile Inst. 40*, T220-31 (Apr. 1949).

A method is described for the determination of the damping capacity for torsion of fibers. The damping capacity is obtained from the decay of torsional oscillations of a small disc suspended from a fiber. A method for the determination of Young's modulus for bending of short fibers is also described. Young's modulus is calculated in terms of length, diameter, density and fundamental frequency of transverse vibrations when excited to resonance by either an electromagnet or a sound field. The damping capacity of the same fiber is determined from the sharpness of resonance. Results obtained by the 2 methods of measurement of damping capacity are in good agreement for homogeneous fibers. For fibers having a heterogeneous structure such as wool, the damping capacity for bending is not necessarily the same as the value for torsion.

Methods of measuring the D.F.E. of hair fibers. R. W. Moncrieff. *Fibres 10*, 205-08 (June, 1949).

Four methods for determining the directional friction effect (D.F.E.) in wool fibers are discussed. The 4 methods are: (1) the violin bow method of Speakman and Scott; (2) the wet violin bow method (Speakman and Scott); (3) the lepidometer method (Speakman, Chamberlain, and Menkart); and (4) the Frishman, Smith and Harris apparatus. The violin bow method, wet and dry, which requires that a large number of fibers be stretched taut on a suitable mounting board, has 2 disadvantages: (1) it is tedious, and (2) no measurements can be made on individual fibers. The Frishman et al apparatus, which consists of a chainomatic device so constructed that fiber movement can be readily detected, is the simplest and appears to be well suited for giving reliable results.

New technique for the observation of wool scales with the microscope. Y. Baillie. *Bull. de L'Institut Textile No. 12*, 9-14 (June, 1949).

A new rubber-xylene mounting medium is described, which can be used conveniently in the Hardy and Manby technique of microscopical wool scale study.

Textile materials: Wear properties. V. E. Gonsalves. *Enka en Breda Rayon Rev. 2*, 121-23 (1948); *in Dutch.*

A brief account is given of a theory and an experiment concerning the abrasion of a single rayon filament. A formula is derived expressing the wear properties in terms of 3 characteristic values which are determined experimentally, namely, (1) per cent. strength decrease per per cent. denier decrease, (2) diameter decrease per second, and (3) absolute strength. (through *J. Textile Inst. 40*, A202 (May, 1949)).

Top wool analysis. Harry Haigh. *J. Textile Inst. (Proc.) 40*, P489-93 (June, 1949).

The author describes the proper way to analyze wool top and lists 16 important characteristics of this material. The conditions governing the judgement or analysis of wool tops are also given. These conditions may be divided into: 1) personal, 2) atmospheric, and 3) physical. The requirements for each of the categories are an open mind, good north light, and a newly drawn ball respectively.

Root-mean-square fiber daimeter of non-medullated tops, rovings and yarns: gravimetric determination. Wool Industries Res. Assn. *Proc. Tech. Committee Int. Wool Text. Organisation 2*, 13-18 (1948).

A description of the W.I.R.A. gravimetric method of determining mean fiber diameter is as follows: A numerical sample of fibers is taken by cut squaring (Daniels, *J. Tex. Inst. 33*, T137 (1942), as modified by Palmer, *J. Tex. Inst. 39*, 8 (1948)). The length of each fiber is measured by stretching with 2 pairs of forceps till the crimp is just removed. The measured fibers are collected, cleaned with a solvent, and weighed at fixed relative humidity. The total weight of the sample is divided by the total length of the sample, to give the root-mean-square diameter. A description is given of the equipment required, the detailed execution of the method, the calculation of the results, and the sources of error. For routine work, approximately 100 fibers should be measured for 2% accuracy, 400 for 1%, and 1,600 for ½%. (through *J. Textile Inst. 40*, A199 (May, 1949)).

Fiber length and gravimetric diameter: determination; modified W.I.R.A. method. Peltzer et Fils S. A. *Proc. Tech. Committee Int. Wool Text. Organisation 2*, 27 (1948).

A description of a modification of the W.I.R.A. gravimetric method to be used in the 1948-49 experiments. After fiber sampling by Daniels' cut squaring method (see preceding abstract), length is measured as follows: The fiber is caught at

about 1 mm from each end by small brass clamps. One clamp is set in a fixed position on a vertical board, the fiber hanging freely under the weight of the other clamp, which is sufficient to remove the crimp without stretching the fiber. The length is read on a scale fixed on the board. (through *J. Textile Inst. 40,* A199 (May, 1949)).

Tops: fiber diameter measurements. Wool Industries Res. Assn. *Proc. Tech. Committee Int. Wool Text. Organisation 2,* 1-4 (1948).

Five different laboratories measured the fiber diameter of 5 tops by 3 different methods. The results are given and discussed. The estimated "errors of the methods" are as follows, the figures given being standard deviations: projector method 0.53 microns, W.I.R.A. gravimetric method, 0.48 microns, and Maillard and Roehrich gravimetric method, 0.44 microns. On non-medullated tops, the W.I.R.A. gravimetric mean agrees with the projector mean, and the Maillard Roehrich mean is about 1 micron higher. A possible explanation of this discrepancy is given. Reasons are given for assuming that there is probably more room for improvement in a gravimetric method than in the projector method. (through *J. Textile Inst. 40,* A199 (May, 1949)).

Wool fiber length measurement: note on the combed tuft method. S. L. Anderson. *Proc. Tech. Committee Int. Wool Text. Organisation 2,* 19-21 (1948).

A description is given of the combed tuft method, which is shown to give a cross-section x density x crimped length proportioned mean crimp length. A technique is described which materially reduces the variability of results, and figures are given for the precision obtainable. (through *J. Textile Inst. 40,* A199 (May, 1949)).

Wool fiber diameter measurement: projector method. Wool Industries Research Assn. *Proc. Tech. Committee Int. Wool Text. Organisation 2,* 22-6 (1948).

A detailed description is given of the procedure used in the projector method to be used in experiments in 1948-49. A typical diameter data sheet is given for 64s top, showing the calculation of the coefficient of variation. (through *J. Textile Inst. 40,* A199 (May, 1949)).

Wool fineness measurement: effect of moisture. S. L. Anderson & R. C. Palmer. *Proc. Tech. Committee Int. Wool Text. Organisation 2,* 5-12 (1948).

The water equilibrium between wool fiber pieces and medium in the projection microscope method

is considered in terms of the "water buffering power" of the wool fibers and the medium. For the quantities of wool and medium commonly used in making up a slide, it is expected that (a) wool fibers will retain on the slide whatever regain they had before the slide was prepared if the medium is one of the low water buffering power (paraffin, cedar wood oil), (b) wool fibers, whatever their initial regain, will reach on the slide a regain corresponding to the water vapor pressure of the medium if the medium has a high water buffering power (water, glycerine, glycerine-water mixtures). Measurements are given of the fiber diameter of a certain wool top (a) in cedar wood oil after conditioning the wool to various regains, (b) in glycerine-water mixtures. The results agree with prediction within the experimental error. There is evidence that glycerine slowly penetrates the fiber in the presence of water. Measurements of glass fibers in 4 media of different refractive index showed no change with refractive index within the experimental error. The characteristics of a suitable medium are discussed in the light of the theory and experiments described. (through *J. Textile Inst. 40,* A199 (May, 1949)).

Clothing and fabrics G 1

Characteristics for warmth in underwear fabrics. A. B. D. Cassie. *J. Textile Inst. 40,* P444-53 (May, 1949).

Skin reactions and body metabolism are discussed in so far as they determine requirements for clothing; it appears that thermal insulation combined with a high permeability to water vapor are necessary for the skin to function properly. Heat insulation in fabrics is normally supposed to be due to "entrapped" air. An investigation of the problem of "entrapped" air shows that it really implies the drag on air movement given by the large total surface of all the fibers in a fabric. The extent of these surfaces is calculated, and some estimates are obtained of the fraction of the total surface which does exert drag on air movements. This accessibility of the fiber surfaces to air is probably the most important factor in determining the "warmth" of different fibers. It is shown to be related to the elastic properties of the fibers, and wool shows the closest approach to the ideal fiber from this point of view.

Dimensional changes of knit goods in laundering. Hazel M. Fletcher, Mary Ellen Duensing & Jane F. Gilliam. USDA. *Am. Dyestuff Reptr. 38,* 481-3, 512 (June 27, 1949).

Changes of width and length in 5 launderings

were determined for plain knit and plated fabrics, knit with 32 and 40 courses per in. from cotton, wool, viscose rayon, and nylon yarns. Dimensional changes varied with the type of construction, number of courses per in., and fiber content. Knitted fabrics usually shrank more in length than woven fabrics of similar fiber content. The greatest change usually took place in the first laundering. Data are presented for the dimensional changes of the fabrics tested.

Homogeneous strain and trellis model. S. A. Shorter. *J. Textile Inst. (Proc.) 40,* P494-518 (June, 1949).

Experiments on the behavior of various textile fabrics under the action of simple pulls applied in various directions relative to the fabric structure are discussed. The author discussed the general technique of the experiments and the construction and application of specialized clamps (roller grips) so that the specimen is free to assume the state of strain corresponding to a simple pull. A series of experiments serve to establish that the classical theory of stress-strain relations and the theory of the trellis model are applicable to textile fabrics in spite of their discontinuous nature. The same experiments also prove that the roller grips produce a state of homogeneous stress, the stress being a simple pull. Finally a series of experiments is carried out to show the effects of simple pulls on textile fabrics. For each imposed state of strain the appropriate Trellis Model is deduced and the relation of the various models to the structure of the fabric is discussed.

Rayon dress fabrics: Wearing qualities. J. C. Meijberg. *Enka en Breda Rayon Rev. 2,* 101-06 (1948) ; *in Dutch.*

Nomenclature and applications of rayon products are considered, and properties of rayon fabrics of particular importance from the consumer's point of view, such as appearance, handle, creasing, heat isolation and launderability are discussed. Photomicrographs of 12 different rayon fabrics are reproduced. (through *J. Textile Inst. 40,* A201 (May, 1949)).

Shrinkage in knitted fabrics. W. A. Dutton, Hosiery Research Council. *Textile Mfr. 75,* 261-63 (June, 1949).

A summary is given of the results of a statistical analysis of failures in a group of used army socks that had been made unshrinkable under the British shrinkage control scheme during the war. It was found that 54.3% of the socks showed evidence of felting due to wear, 14.7% were characterized by an overall felting effect which was attributed to laundering, 2% of the socks showed signs of incorrect rib top structure, 12½% had evidence of bad fitting, 88.9% had holes in the heel, 85.0% had holes in the toe, 87.5% of the socks examined were stained on the underside of the foot. Based on the felting statistics it was concluded that the degree of treatment given to prevent felting was inefficient.

Shrinkage resistance tests: Application of statistical methods. E. G. Carter. *L'Ingenieur Tex. 370,* 73-91 (1948).

A discussion of the following problems arising in the application of statistical methods to tests on the shrinkage of knitted fabrics: (1) sampling, (2) the results given by testing machinery, and (3) quality control (through *J. Textile Inst. 40,* A202 (May, 1949)).

Instruments and instrumentation G 2

Apparatus to depict the load-elongation diagram of yarn at 5 cycles per second. Francis Breazeale & John Whisnant. *J. Applied Physics 20,* 621-26 (June, 1949).

An apparatus is described which presents on a cathode-ray oscilloscope the load-elongation hysteresis diagram, loading and unloading, of a length of yarn. The growth of the sample as a function of time is automatically plotted, and, in addition, the stretch modulus of the sample at any time may be determined from the setting of an amplifier dial. As a way of illustration of the type of data which may be obtained with this apparatus, there are shown both the absolute and percent energy losses exhibited by tire cords of widely different constructions.

Comparative effect of the Fadeometer and sunlight on dyes. Rene Toussaint & Claude Zuber. *Bull. de L'Institut Textile No. 12,* 29-38 (June, 1949).

Dyes for cellulosic or animal fibers were exposed side by side to the light of the Fadeometer and sunlight. The degree of fading was measured by means of the Toussaint photocolorimeter, or compared by a purely visual method. The conclusions reached were substantially equivalent: the action of the Fadeometer on dyes is not absolutely identical with that of sunlight. It is therefore, not possible to compare the fading obtained with the Fadeometer and that resulting from exposure to the sun, without reservation. Color fastness indices computed according to the degree of fading in the first case may differ from those found by

the ordinary insolation method. The American device can therefore be used for this purpose only with certain reservations or in entirely special cases. The Fadeometer can render great service in laboratories where it permits of making a series of preliminary tests and of effecting a first clarification of problems, even during months when sunlight is adequate.

Hand-operated testing machine. Anon. *Textile Age 13*, 81 (July, 1949).

A new hand-operated multi-low-range universal testing machine is reported to be the first entirely hand-operated physical tester in such a low testing range. The machine is accurate within ½ of 1% and has a range of from zero to 100 lbs.

Inclined plane tester completely redesigned. Anon. *Textile Industries 113*, 181, 183, 185 (July, 1949).

The IP-4 inclined plane tester is reported to be completely redesigned with only the principles of the inclined plane tester retained. A description of the redesigned tester is given.

Shirley Analyser now available. Anon. *Textile Industries 113*, 179 (July, 1949).

Practical uses of the Shirley Analyser, an instrument for removing trash from samples of cotton by pneumatic filtration principles, are reviewed.

Simplified sliver tester. J. U. Steiger. *J. Textile Inst. (Trans.) 40*, T253-67 (May, 1949).

A machine is described by which variations in the thickness of cotton slivers are mechanically measured and charted. Greater dimensional tolerance is permissible than in previous designs, resulting in a relatively low cost of manufacture. Examples of the use of the machine in detecting sliver faults are given.

Testing machine for measuring the elasticity of thread. H. Mintrop. *Melliand Textilber. 30*, 6-7 (Jan. 1949); *in German.*

A machine is described for measuring the elasticity of a thread as it runs successively from a measuring reel over a driven and a driving pulley, round each of which it may be wound once or several times. The friction of the yarn on the pulleys makes it possible to place a load on the thread by the circumferential force of the driving pulley. By braking the driven pulley and movably mounting the driving pulley, a preliminary tension can be applied to increase the tension of the yarn. The change in the length of the yarn (which must be ascertained in order to determine its elasticity)

is indicated by the difference in the speed of the pulleys.

Textile instruments. X-XI. pH measurement. R. W. Moncrieff. *Fibres 10*, 96-9 (Mar. 1949); 121-4 (Apr. 1949).

Various instruments used in measuring pH are discussed briefly. See TTD: *6*, 153 & 409 for previous articles in this series dealing with other instruments of textile interest.

Turns per inch automatically recorded on twist testing machine. J. Lomax. *Textile Recorder 67*, 78 (June, 1949).

A reversible revolution counter which can be fitted to an ordinary twist tester is described. The new attachment facilitates reading the results of twist tests, especially for plied yarns.

Wool measuring device. Anon. *Textile Industries 113*, 182, 185 (Aug. 1949).

The staplemeter, a device that has a photoelectric cell which measures the light reflected from different regions of wool staple, is reported to measure the tippiness and possibly the tenderness or break in wool.

TEXTILE MILLS H

Advanced engineering in Swiss Stoffel plant. H. Ulrich Steinmann. *Textile World 99*, 101-03, 190, 194 (June, 1949).

This is a description of a weaving mill built in Switzerland in 1942. The construction of the building, its auxiliary power system, the heating system, the air conditioning, and the canteen are described. The manufacturing equipment is not discussed.

Assembly line methods used in underwear knitting mill. Anon. *Textile Industries 113*, 150-1 153, 155 (July, 1949).

Modern assembly line methods are being used in underwear manufacture (E-Z Mills, Inc.). A full time engineering staff studies production methods, and specialized operatives perform single operations on assembly line production. Machines may easily be rearranged by the use of individual electrical outlets. Lubrication and maintenance problems are attended to by trained experts.

Centralized lubrication of textile machinery. Wm. A. Newell & Prentice M. Thomas. *Textile World 99*, 115-26 (May, 1949).

This is a discussion of centralized lubrication, what it is and what it can do for textile mills, the machines it has been applied to, and the ma-

chines it can be applied to. Also discussed are new machines on which centralized systems are available, how the 5 available systems work, system failure, and future developments. Numerous illustrations are given. Reprints are available from the publisher at 25¢ each.

Changes in air conditioning aided by magnetic drive. C. Mallard Bowden. *Textile World 99*, 131, 133, 254, 256 (Apr. 1949).

The air conditioning system of the Wiscasset Mills Co., Albemarle, N. C., is described. A feature of the system is the magnetic coupling between the motor and the compressor which permits changes in speed to be made smoothly.

Five systems available for mill humidification. Agnew H. Bahnson, Jr., Bahnson Co. *Textile World 99*, 104-05, 196, 198, 200, 202 (June, 1949).

A brief description is given of the equipment necessary to condition a mill using each of 5 different systems. These systems range from atomizers to complete air conditioning systems utilizing refrigeration for cooling and dehumidifying. A study of wet-bulb temperatures in Eastern North Carolina and the effectiveness of evaporative cooling was made.

Floor dry-cleaning method. C. A. Wright, Collins & Aikman Corp. *Textile Industries 113*, 89-91 (Aug. 1949).

A mechanized floor dry-cleaning maintenance program is reported to reduce labor costs, floor patching, and losses from floor grime, splinters, etc. Floors are easier to clean, are more dirt-resistant, and give greater light reflection.

Good lighting promotes product quality and employee efficiency. Anon. *Textile Industries 113*, 129, 131, 133 (Aug. 1949).

The use of soothing color schemes and high and low level lighting has been found to reduce eye fatigue and prevent errors in workmanship in full-fashioned hosiery mills. Precautionary measures in handling hosiery, such as the use of trays or boxes for hosiery, rubber finger cots for operatives, and inspection of operatives' hands are reported to reduce a major portion of picks, pulls, and seconds.

Low-voltage static eliminator. Anon. *Textile Industries 113*, 177 (July, 1949); *Am. Wool Cotton Reptr. 63*, 93 (June 16, 1949).

The Model LV low-voltage static eliminator is designed for processes where space limitations make it impractical to install high-voltage equipment.

It is particularly well-suited for slashers and warpers.

Make your own polishing arbors. Ernest Bridges. *Textile Industries 113*, 135-6 (Aug. 1949).

Details for making polishing arbors in the mill shop are described and illustrated.

Materials handling in the textile mill. Anon. *Textile Industries 113*, 97-107, 110-11, 113, 115, 117, 119-20 (July, 1949).

Various problems involved in handling materials in textile mills are discussed, including raw stock handling, lap handling, handling cans, handling roving, yarn handling, beam handling, and cloth room handling. Concise descriptions of a variety of better materials handling methods for each problem are presented.

Metallizing cuts supply costs. Geo. L. Lewis, Abney Mills. *Textile Industries 113*, 73-5 (Aug. 1949).

By metallizing worn out equipment parts, a large percentage of them may be salvaged and will frequently last far longer than the expected life when new. There is some part on every piece of moving machinery from the opening room to the finishing department that may be rebuilt. Examples of application of metallizing may be found in drawing, roving, or spinning rolls; bearings on picker calender rolls, picker feed rolls; card bearings, etc.

More foot-candles mean more production. Wm. A. Newell. *Textile World 99*, 110-3 (Apr. 1949).

Controlled tests made by Bachmann Uxbridge Worsted Corp., Uxbridge, Mass., showed definite improvement in weaving and spinning efficiencies with increases in foot-candles. There were simultaneous decreases in bad yarn and finished-fabric rejects. Data are given showing the effect of the improved lighting on various operations. Individual processes requiring more light than afforded by the general illumination benefited from custom-designed supplementary installations. A well-planned and executed maintenance program keeps the lighting peak at peak efficiency.

Natona builds modern lace plant. Anon. *Textile Industries 113*, 122-3 (July, 1949).

A description of the general construction, utilities, ventilation, lighting, manufacturing facilities, and employee arrangements of a modern plant (Natona Mills, Inc.) is given. The new mill houses tricot, simplex, bobbinet, and Leavers lace machines with complementary dyeing and finishing equipment.

New uses for nylon moldings. John S. Trevor. *Textile Recorder 67*, 82 (June, 1949).

Nylon molding powder is now being produced in commercial quantities in Great Britain for molding parts of textile machinery, such as heavy duty pickers, ring travelers, bobbins, small bearings and special types of gaskets. The greater cost of the nylon moldings, in comparison with wood, metal and molded thermosetting plastics is offset by the extreme toughness of the nylon, its resistance to chemical attack, durable smooth finish, and light weight.

Our future textile machinery. Anon. *Am. Wool Cotton Reptr. 63*, 12-13, 25 (Aug. 4, 1949).

A review is given of some of the developments which have been perfected in the last decade with a discussion of further developments to come in the future.

Quality and waste control. Anon. *Am. Wool Cotton Reptr. 63*, 9-10 (June 30, 1949); 10-11, 33 (July 7, 1949); 9-10 (July 21, 1949).

A report on a question and answer forum on quality and waste control at a meeting of the Eastern Carolina Division of the Southern Textile Assn. is given. Among the many methods discussed are laboratory testing, periodic checking, reports maintenance, employee training, supervision, and doubling trumpet drawing.

Solve boiler insulation problem. Anon. *Textile Industries 113*, 83 (Aug. 1949).

By the use of mineral wool blocks and cement to seal the cracks between the blocks, greater boiler efficiency is obtained and waste heat from radiation into the boiler room is prevented (at Supreme Textile Printers, Inc.). Application of the insulation and estimated savings are discussed.

Spooler bobbin loading machine. Anon. *Textile Industries 113*, 177 (July, 1949).

A new spooler bobbin loading machine is described which is designed to accommodate various size doffing boxes directly from the spinning room, or bobbins from the bins. Unnecesasry handling is thus eliminated.

Storage and control of maintenance supplies. Philip H. Kline, Eng. Dept., Am. Enka Corp. *Southern Power & Industry 67*, 64-6 (June, 1949).

The system used in receiving, checking, inspecting, and storing maintenance supplies at this large plant is described. Brief explanations of stock records used, obsolete stores system, and salvage of scrap or reuseable supplies are also given.

Swiss textile machinery—1949. Anon. *Brit. Rayon & Silk J. 26*, 45-55, 66, 70 (June, 1949).

This is a review of the machines and accessories of interest to the rayon, synthetic textiles and silk industries exhibited at the Swiss Industries Fair. The exhibits of 18 firms are described and pictures of the machines are included. Much factual information is given. A partial list of the machines and devices includes an up-twister, looms of several different kinds, a dyeing machine, a warping creel, nonautomatic and automatic pirn winders, an electric warp stop motion, beam stands, beam jacks, hydraulic shuttle-checking devices, a hank mercerizing machine, and several different types of winder.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Action of light on cellulose acetate rayon and nylon dyed with Duranol, Dispersol, SRA, and Solacet dyes. G. S. Egerton. *J. Soc. Dyers Colourists 64*, 336-41 (Oct. 1948).

A study was made of the photochemical degradation of cellulose acetate rayon and nylon yarns dyed with dispersed and soluble acetate dyes. Measurements were made of the losses in tensile strength of the yarns after exposure to sunlight in atmospheres of dry and moisture-saturated air. Many of the acetate dyes increase the degradation of nylon to a considerable extent, but have a very much smaller effect on the degradation of cellulose acetate rayon. In several cases the loss in strength of the dyed cellulose acetate was less than that of the undyed yarn exposed under identical conditions. The photochemical degradation of both textile materials, whether dyed or undyed, was found to be due to oxidation processes.

Application of organosilicon polymers to wool. P. Alexander, D. Carter & C. Earland. *J. Soc. Dyers Colourists 65*, 107-15 (Mar. 1949).

It is known that wool can be made non-felting by building up a film of polymer on the surface of the fibers to mask the scales known to be responsible for shrinkage. Organosilicon polymers were investigated for this purpose because these polymers can be produced from very reactive monomers, giving rise to chemically anchored polymers; also, by using monomers with similar chemical reactivities, plastics of widely different physical properties can be produced. To obtain non-feltability with a deposit of less than 5% (1) the polymer must be produced from a monomer containing a

reactive grouping such as Si-Cl, groupings such as Si-OC_2H_5 and Si-NH_2 not being satisfactory; and (2) the polymer must be a hard solid, oils, rubbers, and waxes not being effective. Evidence is advanced which shows that initially the polymer is anchored to the fibers via -Si-NH- linkages; although this bond is hydrolyzed by water, it serves the purpose of producing an oriented deposit of polymer on the surface of the wool fibers.

Destruction of organic matter by acid ashing, with particular reference to the use of perchloric acid in the oxidation of textile materials. A. G. Hamlin, Brit. Cot. Industry Res. Assn. *J. Textile Inst. (Trans.) 40,* T343-55 (June 1949).

The development of a suitable acid ashing procedure using perchloric acid is discussed. Techniques employed for the oxidation of cotton with nitric acid, or hydrogen peroxide, and with mixtures of sulfuric and nitric acid, sulfuric acid and hydrogen peroxide and perchloric, nitric and sulfuric acids are described in detail. The advantages of the perchloric acid systems which include suitable distillation temperature and its effectiveness as an oxidizing agent are also cited. The oxidation of such textile fibers as viscose acetate and cuprammonium rayons, nylon, silk, oilproofed cotton cloth, rubber coated cotton cloth, and paraffin impregnated fabrics using the perchloric, nitric and sulfuric acid system is also discussed.

Electrical resistance of yarns made from mixed fibers, and its use in measuring the moisture condition of these yarns. J. W. S. Hearle & E. H. Jones. *J. Textile Inst. (Trans.) 40,* T311-26 (May, 1949).

Initial assumptions are made concerning the resistance of a yarn of one type of fiber, the application of the parallel law of resistance to yarns of 2 types of fibers, and the relation between the individual and total moisture contents. From these assumptions equations are derived which relate the resistance of a yarn of known amounts of 2 types of fiber to its total moisture content and to the properties of yarns made from the pure fibers. Experiments are described in which the resistances of yarns of cotton, viscose staple and wool and of yarns containing various proportions of cotton mixed with one of the other 2 fibers are measured. Reference is made to the effect on the resistance of the type of the electrode system, the voltage, and the method of mixing the fibers in the yarn. It is shown that there is good agreement between the theoretical equations and the experimental results. The relation between resistance

and relative humidity of the yarn is considered. A general equation for the resistance of a yarn of any number of types of fiber is given. Applications of the results to the Shirley Electrical Hygrometer and the Shirley Moisture Meter are discussed briefly. In an appendix, experiments to measure the resistance of viscose staple yarns and cotton yarns are described and an explanation is given of an apparent discrepancy between results in the present paper and those found in previous experiments.

Fractionation of starch. Part I—Estimation of amylose in the presence of amylopectin; Part II—Separation of amylose and amylopectin. R. S. Higgbotham & G. A. Morrison. *J. Textile Inst. 40,* T208-19 (Apr. 1949).

Part I—The amyloses and amylopectins are sharply differentiated by their reactions with iodine, and this is the basis of all the practicable methods for estimating amylose. These depend either upon the potentiometric determination of the amount of iodine absorbed under specified conditions, or upon measurement of the color-intensity of the iodine complex. The authors have investigated methods of both types. The former appears to be the more accurate. Only simple apparatus is required, and a procedure in which the only special equipment is a sensitive galvanometer is described in the present paper. Part II—In this investigation butanol, pyridine, and iso-amyl alcohol were employed as precipitants for amylose.

Genesis of synthetic fiber. R. W. Moncrieff. *Textile Mfr. 75,* 285-88 (June, 1949).

This is a review dealing primarily with Carother's work in the field of superpolymers which led to the development of nylon. Also discussed very briefly are the chemistry and properties of Perlon, Terylene, Vinyon, Saran and the German Pe Ce fibers.

Quantitative analysis of mixtures of wool and silk by cupri ethylenediamine. le Chanoine Pinte & Mlle. Jafflin. *Bull. de L'Institut Textile No. 12,* 23-8 (June, 1949).

The behavior of wool and silk in the presence of the same cupri ethylenediamine reagent was investigated; the composition of the reagents used for quantitative analysis of a mixture of wool and pure silk is given; and a detailed description is given of the method of making the analysis and how the results should be computed, with a practical example of the proportions to be used.

Research and the dyer. [T. Vickerstaff]. *Textile*

Recorder 67, 67-70 (June, 1949).

This is a review of a paper presented by T. Vickerstaff at the Textile Conference, Amsterdam, Apr. 11-12, 1949. The dyeing of protein consists in the formation of a salt between the acid groups in the dye and the basic groups in the protein. This explains the difficulty in dyeing nylon since the number of free basic groups is approximately 0.04 equivalents per kg. compared to 0.8 for wool. In the dyeing of cellulose, differences in surface area and porosity are important in determining the rate of dyeing; however, little is known regarding the actual chemical mechanism. The work of Hodgson on the Planar Configuration of direct dyes, that of Peters and Marshall on the heat of reaction of direct dyes with cellulose, and the thermodynamic studies of Gilbert and Rideal in the case of acid dyes on wool, are discussed.

Structural factors of cellulose fibers and their influence on chemical reactions. Kurt Hess. *Kunst. u. Zell. 27*, 37-50 (Feb. 1949).

The accessibility due to the internal structure of the fiber has an accelerating effect on reactions involving cellulose, while the lack of accessibility due to the external structure has a retarding effect.

Theory of drafting of wool slivers.—I. D. R. Cox, Wool Industries Res. Assn. *Proc. Royal Soc. (Series A) 197*, 28-51 (May 11, 1949).

The production of a textile yarn involves the drawing out of a thick intermediate web of fibers (sliver) by a process known as drafting. In the present paper, a mathematical study is made of the dynamical mechanism of drafting, with the object of investigating the effect of relevant factors on the irregularity of the yarn produced.

Torque twist relationships in single and multiple rayon filaments. W. E. Morton & F. Permanyer, Manchester Univ. *J. Textile Inst. (Trans.) 40*, T371-80 (June, 1949).

The results of experiments carried out on rayon filaments in respect to their behavior in torsion are discussed. Four rayon and one nylon materials were used in this investigation. All of the tests were carried out on an apparatus consisting of 5 independent torsiometers. The results of this series of experiments led to the conclusions that only for monofilaments is it possible to derive mathematical relations which characterize their behavior. In the case of multifilaments only a qualitative statement can be made regarding their behavior, namely, that the torsional resistance will increase with twist, number of filaments and will vary according to the shape and frictional properties of the filaments concerned.

Viscose rayon fibers. II—The orientations of skin and core. J. M. Preston & K. I. Narasimhan. *J. Textile Inst. (Trans.) 40*, T327-37 (May, 1949).

In a previous communication (Preston and Bhat. *J. Textile Inst. 39*, T211 (1948)) it was shown that the fiber refractometer measures the refractive indices of the core of viscose fibers. It is well known that the Becke method measures the refractive indices of the skin of fibers. It follows that measurements on the same fibers by the 2 methods should give a rapid and simple way of measuring the optical properties and through them the orientations of skin and core. A large range of fibers of known methods of manufacture must be examined to find any systematic relationship. If this were done it would help to elucidate further the structures of the skin and core of viscose fibers. The conjoined use of the Becke and fiber refractometer methods offered a comparatively simple technique for the purpose. Several series of specially prepared fibers were examined by the new combination of techniques.

X-ray studies on the crystallinity of cellulose. P. H. Hermans & A. Weidinger. *J. Polymer Sci. 6*, 135-44 (Apr. 1949). (Contribution No 55 from the Laboratory for Cellulose Research, Utrecht).

The method for the evaluation of the percentage crystallinity in cellulose preparations from x-ray intensity measurements, previously described in detail (*J. Applied Physics 19*, 491, 506 (May, 1948) see TTD: *5*, 460), is reviewed briefly and new material presented consisting of crystallinity percentages between 8% and 70%.

TEXTILE EDUCATION AND RESEARCH J

Industrial application of new knowledge. [J. Boulton]. *Textile Mfr. 75*, 257-58 (June, 1949).

This is a review of a paper presented by J. Boulton at the annual conference of the Textile Institute held in Dublin from May 20-27, 1949. Mr. Boulton pointed out that the British fell behind the United States at the pilot plant stage in translating research findings in the field of textiles into practical ends. Blame is placed on management and technical staffs for not reading and trying to absorb into mill practice the papers published by industry.

Inner workings of AATCC research. J. Robert Bonnar, Gen. Dyestuff Corp. *Am. Dyestuff Reptr. 38*, 486-7 (June, 27, 1949).

In a lecture, the research activities of the AATCC are reviewed.

New radioactive device applicable to textile research. Anon. *Am. Wool Cotton Reptr. 63*, 36 (Aug. 4, 1949).

The Beta Gauge is a device that consists of a beta radiation source and a radiation detector between which goods are passed; the goods absorb the radiation in proportion to their weight per unit area. Variations in weights of picker laps, card webs, slivers, etc. can be measured and controlled. The uniformity and thickness of coatings for textiles can also be determined and controlled.

Planning a mill experiment . . . worsted processing. J. Ingham, Wool Industries Res. Assn. *Textile Mfr. 75*, 262 (June, 1949).

This restates the thesis that many of the experiments carried out to improve worsted processing could be considerably simplified by the use of pilot plant machinery, thereby avoiding interference with production and allowing for better control of variable factors. However, it is inferred that the result of processing on a pilot plant is likely to be different from that obtained by processing on a mill plant.

ADVERTISERS IN THIS ISSUE

BARNES TEXTILE ASSOCIATES, INC.

DANIEL CONSTRUCTION COMPANY
Roland G. E. Ullman

DRAPER CORPORATION

WILLIAM ISELIN & COMPANY, INC.
Hazard Advertising Company

M. W. KELLOGG COMPANY

LOCKWOOD GREENE ENGINEERS, INC.
Sanger-Funnell, Inc.

ROBERT AND COMPANY ASSOCIATES
Liller, Neal and Battle

SACO-LOWELL SHOPS
Wells Advertising Agency

SCOTT TESTERS, INC.
Richard Thorndike

SONOCO PRODUCTS COMPANY
Bennett Advertising Agency

STEEL HEDDLE MANUFACTURING COMPANY
McNevin, Wilson and Dalldorf

VIRGINIA-CAROLINA CHEMICAL CORPORATION
Albert Sidney Noble

WHITIN MACHINE WORKS
Cutler and Quinn

BARNES SERVICE

Consulting Engineers

TO THE TEXTILE INDUSTRY FOR OVER 1/3 CENTURY

Surveys--Reorganizations--New Plant Developments for Cotton, Wool, and Synthetic Yarn and Cloth Processing, Bleaching, Dyeing, Printing and Finishing.

★ Plant Appraisals ★ Mechanical and Operating Surveys — New Methods ★ Scheduling and Planning ★ Work Load Studies, Job Analysis and Evaluation, with Incentive Plans ★ Standard Cost Installations ★ Cost Control Methods.

Labormeter
Burden-meter
Waste-meter

SERVING THE TEXTILE INDUSTRY OF THE WORLD FOR OVER A THIRD OF A CENTURY

BARNES TEXTILE ASSOCIATES, Inc.
10 HIGH STREET, BOSTON 10, MASS.
318 MONTGOMERY BLDG., SPARTANBURG, S. C.

Index to Authors

VOLUME 6, NUMBER 9, SEPTEMBER 1949

	Column No.
Aalbers, B. J.	709
Abbott, N. J.	672
Alexander, P.	735
Alter, F. A.	714
Archer, G. E.	700
Aspinwall, R. H. S.	685
Atwood, H. B.	684
Audley, R. S.	684
Bahnson, A. H., Jr.	732
Baillie. Y.	724
Baines, J.	694
Baker, Wm. H.	693
Ball. H. W.	684
Barker, W.	692
Bendigo, C. W.	672, 682
Bennett, D. C.	671
Berry, J. K.	688
Bick, Sigfrid	708
Billmeyer, B. R.	680
Bird, W. F.	679, 680
Bloch, R.	719
Blount, Chas.	721
Bonnar, J. R.	740
Boulton, J.	739
Bowden, C. M.	732
Bradbury, E.	692
Breazeale, F.	729
Bridges, E.	702, 733
Brown, B. J.	694
Burbidge, J. H.	720
Busath, H.	711
Caldwell, S. A. G.	675
Carman, F. H.	681
Carter, D.	735
Carter, E. G .	729
Cassie, A. B. D.	727
Castle, V.	694
Chakrabarti, B. K.	690
Christiansen, C.	687, 693, 705
Christley, P. W.	697
Clark, E. W.	723
Clibbens, D. A.	668
Coggi, S.	670
Coghland, G. A. D.	694
Collidge, A. E.	703
Cox, D. R.	690
Cox, I. D. R.	738
Crawford, J. B.	710
Creasey, Geo.	701
Crook, H.	715
Dakin, G.	684, 685
Dawes, E. C.	703
Dawson, F.	694
Denyssen, I. P.	672
Downey, J. H.	721
Draves, C. Z.	717
Duensing, M. E.	727
Dunlap, C. K.	687
Dutton, W. A.	728
Duvivier, H. M. A.	676
Duke, Lady H.	669
Earland, C.	735
Egerton, G. S.	735
Epelberg, Jack	719
Eppler, E.	686
Ewer, A. C.	709
Fargher, R. G.	712
Fillinger, Chas.	684
Findley, E. M.	708
Fletcher, H. M.	727
Frantz, Albert	693
French, Dean	679
Gallagher, J.	716
Gautreau, A. G.	712
Gibson, S. A.	715
Gilbert, T. A.	703
Gilliam, J. F.	727
Goldschmidt, K.	719
Goldschmidt, P.	719
Gonsalves, V. E.	724, 725
Goodings, A. C.	672
Grove, C. S.	706
Haigh, Harry	725
Hamlin, A. G.	736
Hanse, R. W.	709
Hardison, J. B.	701
Hargreaves, T.	700
Harmond, J. E.	669
Hart, Geo.	695
Hearle, J. W. S.	736
Hermans, P. H.	739
Hess, Kurt	738
Hesse, E. O.	695
Higgbotham, R. S.	737
Higgins, E. B.	721
Hilbert, G. E.	671
Himmelfarb, D.	688
Hinnekens, M. G.	713
Holterhoff, H. A.	720
Howitt, F. O.	670
Howlett, A.	688
Huberty, A.	680
Ingham, J.	740
Joffin, Mlle.	737
Johansen, J. V.	669
Johnson, A.	699
Johnston, A.	722
Jones, E. H.	736
Kaplinsky, M.	688
Kaufmann, J. J.	696
Keller, K. W.	710
Kennedy, E. S.	673
Kline, P. H.	734
Kronoff, C. R.	694
Lamboch, F.	702, 705
Lancashire, J. B.	702, 703
Landolt, A.	720
Laplante, H.	695
Laurie, K. S.	710
Lawrence, M.	716
LeCompte, G. C.	723
Lemin, D. R.	718
Lewis, G. L.	733
Lipp, H. H.	723
Lochner, J. P. A.	724
Lomax, J.	731
Lorin, A. C.	674
Lucas, J.	686
Lundstrom, C. B.	698
McCarty, J. E.	688
McCord, F. A.	708
McKinney, J. V.	706
Mader, Hermann	682
Maltba, I. L.	679
Marsden, I.	678
Maxham, D. W.	683
Meade, J. L.	686
Meakins, R. J.	722
Meir, H.	697, 698
Meijberg, J. C.	728
Menking, H.	698
Mhartre, S. H.	717
Middlebrook, W.	699
Millard, F.	709
Millson, H. E.	716
Mintrop, H.	730
Mooradian, S.	716
Moore, J. L.	709
Monch, R.	718
Monerieff, R. W.	724, 731, 737
Monfort, F.	680, 689
Morgan, O. M.	713
Morland	700
Morrison, G. A.	737
Morton, W. E.	738
Munch, F.	675
Nabar, G. M.	716
Narasimhan, K. I.	717, 739
Nau-Touron, A.	685
Neff, E. A.	707
Newell, Wm. A.	731, 733
Olpin ,H. C.	715
Palmer, R. C.	726
Parker, S. P.	689
Patrick, T.	710
Pelce, H.	694
Permanyer, F.	738
Perry, J.	694
Picanol, J.	695
Pinte, le C.	737
Pittman, S.	706
Preston, J. M.	717, 723, 739
Punnose, T. U.	717
Quern, D. S.	714
Quig, J. B.	671
Rabold, C. M.	713
Rathod, J. A.	716
Rattee, I. D.	718
Rhael, E. W.	715
Richter, H.	704
Robinson, A. T. C.	687, 694
Roelofs, G.	700
Rusca, R. A.	677
Rusch, G. O. K.	687, 693, 705
Saba, S.	723
Sanders, J. T.	679
Schlums, O. W.	681
Schnerb, I.	719
Schremp, E. P.	694, 699
Schuler, A.	700
Sens, C. L.	677
Sepavich, V. F.	694
Shimwell, D. W.	696
Shipman, R. E.	686, 681
Shorter, S. A.	728
Siciliano, S. F.	700
Simmens, L.	668
Smart, E. J. L.	685
Smith, R. A.	675
Smith, Y. D.	679
Snowden, D. C.	694
Steiger, J. U.	730
Steinmann, H. U.	731
Stevens, C. B.	717
Stoves, J. L.	719
Straussberger ,J.	706
Szabo, E. J.	697
Taylor ,M. M.	694
Teplitz, I.	714
Theissen, K.	674
Thomas, P. M.	678, 731
Thomas, W .L.	723
Thompson, A.	708
Toussaint, R.	729
Townsend, M. W.	674, 690
Townsend, P.	675, 676
Trevor, John S.	734
Turner, R. G.	698
Tweedie, W.	676
Urguhart, A. R.	668
Van den Abbeele, A. M.	689
Van der Noordan, M. H.	702
Vickerstaff, T.	737, 738
Vin, Rene	702
Vincent, J. J.	694
Wallwork, A.	707
Walter, L.	713
Weidinger, A.	739
Wengraf, P.	722
Wenrich, H. E.	700
West, Geo.	682
Westergaard, C. C.	669
Whewell, C. S.	710, 717
Whisnant, J.	729
White, G. S. J.	673
Wignall, H.	704
Wildermuth, G. R.	674
Williams, D. R. H.	714
Williams, L. J.	683
Wilson, C. A.	679
Wilson, E.	718
Winslow. A. E.	685, 686
Wood, Seth	701
Woods, H. J.	668
Wright, C. A.	732
Yeganaga, H. T.	717
Young, G. O.	701, 704, 705
Zellnik, G.	678
Zuber, C.	729
Zussman, H. W.	712

How To Obtain Copies Of Patents

U. S. patents may be obtained from the U. S. Patent Office, Washington 25, D. C., at 25 cents per copy.

Foreign patents are available in photostatic copies from the U. S. Patent Office, Washington 25, D. C. Charges for photostats of foreign patents are based upon the number of pages in the patent.

German patent applications and other reports listed by PB report number may be obtained in microfilm or photostat from the Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

Canadian patents may be obtained from the Commissioner of Patents, Ottawa, Canada. An estimate of the cost of a patent should be obtained in advance of the order as patents are available only as manuscript or photostatic copies.

Abstracts of U. S. patents are prepared from copies of the patents. Abstracts of Australian patents are taken from *The Australian Official Journal of Patents, Trade Marks, and Designs.* Abstracts of Canadian patents are prepared from claims published in *The Canadian Patent Office Record.*